Report Number: ICRR14665

IEG ICR Review
Independent Evaluation Group

1. Project Data:		**Date Posted:**	06/24/2015	
Country:	Armenia			
Project ID:	P115486		**Appraisal**	**Actual**
Project Name:	Lifeline Roads Improvement Project	**Project Costs (US$M):**	30.40	126.07
L/C Number:	C4549; L7751	**Loan/Credit (US$M):**	25.00	101.49
Sector Board:	Transport	**Cofinancing (US$M):**		
Cofinanciers:		**Board Approval Date:**		02/24/2009
		Closing Date:	12/31/2010	12/31/2013
Sector(s):	Roads and highways (98%); Public administration- Transportation (2%)			
Theme(s):	Rural services and infrastructure (100% - P)			

Prepared by:	**Reviewed by:**	**ICR Review Coordinator:**	**Group:**
Ranga Rajan Krishnamani	Midori Makino	Christopher David Nelson	IEGPS1

2. Project Objectives and Components:

a. Objectives:

The project development objective as stated in the Financing Agreement (Schedule 1, page 4) and in the Emergency Project Paper (page 5) prepared in lieu of the Project Appraisal Document (PAD) was "to upgrade selected sections of the lifeline road network and create temporary employment in road construction".

b.Were the project objectives/key associated outcome targets revised during implementation?

Yes

If yes, did the Board approve the revised objectives/key associated outcome targets?

Yes

Date of Board Approval: 08/27/2009

c. Components:

Component One. Rehabilitation of the Lifeline Road Network (appraisal estimate US$30.00 million and actual cost $123.99 million). This component planned to rehabilitate about 1OO km of the lifeline road network (defined as roads that connected rural communities to an interstate road) located in seven Marzes (administrative divisions). Activities included; (i) civil works for road rehabilitation; (ii) consultancy services for the construction and supervision and technical auditing of rehabilitation works; (iii) updating of the original Millennium Challenge Corporation (MCC) financed 2007 designs and environmental documents; and (iv) project implementation expenses including funding project audits, incremental operational implementation costs and additional costs for intensified project supervision. The scope of this component was expanded (discussed below) through two additional financing in the amount of $42.12 million (2009) and $45.80 million (2010).

Component Two. Technical Assistance (appraisal estimate US$0.40 million and actual cost US$1.88 million). This component aimed at technical assistance for strengthening of the Armenian Roads Directorate (ARD). Activities included; (i) financing a study to review low cost pavement options for Armenia which was to explore options for different pavement types and ways to increase labor based activities; (ii) updating of designs for about 100 km of lifeline roads for a potential project; and (iii) vehicle for supervision and related training. The scope of this component was expanded (discussed below) through two additional financing in the amount of for $0.87 million (2009) and $0.62

million (2010).

Through the two additional financing that were approved within the first two years of project effectiveness the following changes were made to the project components and indicators (ICR, page 4).

At the first additional financing on August 27, 2009:

- The number of roads to be rehabilitated was increased by an additional 140 km (from 100 km to 240 km).
- A "safe village" program was to be implemented for supporting rural communities in implementing road safety measures, recommended by road safety audits and by the National Road Safety Strategy.
- Additional indicators were incorporated for monitoring the total classified roads and the share of rural population with access to all season road.

At the second additional financing on July 15, 2010:

- The number of roads to be rehabilitated was increased by an additional 190 km (from 240 km to 430 km).
- Technical assistance component was to include development of new road geometric standards, feasibility studies, designs of future investments and procurement of road data collection equipment.

d. Comments on Project Cost, Financing, Borrower Contribution, and Dates:

Project Costs: The original appraisal cost (including costs of contingencies and front end fee) was US$30.40 million. With the first and the second additional financing which took place on August 27, 2009 and July 15, 2010, the cost estimates went up to US$76.12 million and then to US$126.10 million. The actual cost at completion was US$126.07 million.

Project Financing: At appraisal, the Bank's contribution was through an US$25.00 million IDA grant. The Bank's subsequent additional financings were through IBRD loans of US$36.60 million and US$40.00 million. With these, the total Bank financing was estimated at US$101.60 million. At closure, the Bank's actual contribution was US$101.51 million. There were no co-financiers.

Borrower's Contribution: At appraisal, the borrower contribution was estimated at US$5.40 million. Their contribution increased by an additional US$9.12 million following the first additional financing, and by an additional US$9.98 million with the second additional financing totaling $24.50 million. At closure their actual contribution was US$ 24.58 million.

Dates: With the first additional financing, the project closing date was extended by one year from December 31, 2010 to December 31, 2011, and with the second additional financing, by two more years to December 31, 2013. The project closed on December 31, 2013.

3. Relevance of Objectives & Design:

a. Relevance of Objectives:

Relevance of Objective: High.

The objective was relevant to the Government's Lifeline Road Development Program launched in 2008, which identified a priority network for providing at least one access road to Armenia’s 960 communities. The objective continued to be relevant to the current Government Strategy. The *Armenia: Transport Sector Development Strategy 2020,* included an investment plan for the road sector, and identified priority investments on the interstate and rural road network for the 2010-2020 period.

At appraisal the Country Assistance Strategy (CAS) for the fiscal years 2004-2008 identified the need for promoting private sector growth by reducing infrastructure bottlenecks, and this CAS and Progress report specifically mentions improving road transport infrastructure as a key outcome indicator. The Country Partnership Strategy (CPS) for the fiscal years 2014-2017 period, highlighted the need " for strengthening competitiveness and supporting job creation." The CPS for the fiscal years 2009-2013 period, highlighted the need for continued investments in lifeline road rehabilitation, for building the foundations for competitiveness and medium term growth (PAD, page 8).

b. Relevance of Design:

Relevance of Design: Substantial.

The statement of the project objective is clear, and the causal chain between the project activities, outputs, and outcomes are logical. Upgrading of the selected sections of the lifeline road network could be expected to improve their conditions. The institutional dimension of the project, in areas such as implementing road safety measures, developing new road geometric design standards, and establishing a data collection management unit, can be expected to improve the capacity of the Armenian Roads Directorate (ARD)'s to manage the lifeline road assets of the country. The civil works associated with road rehabilitation could be expected to create temporary employment in road construction.

4. Achievement of Objectives (Efficacy):

Both the first objective, to upgrade selected sections of the lifeline road network, and the second objective of creating temporary employment in road construction, were rated **substantial**. Since the first objective was output focused and the second objective was outcome focused, they are assessed together below.

Output:

- 446 km of lifeline roads were upgraded at the project closure stage as compared to the target of 430 km. The average roughness of the project roads measured by the International Roughness Index (IRI) reduced from 11.1 m/km to 3.1 IR (ICR, page 17).
- According to the independent technical auditors, 51.5% of the lifeline road network was reported to be in good or good condition at the project closure stage, as compared to 32.2% before the project (ICR, page 44).
- A Road Safety Audit Manual was developed in 2010 as targeted. The staff of the Ministry of Transport and Communication, Armenian Roads Directorate, the Project Implementation Unit, traffic police and design consultants were trained in the principles of road safety audit by an international consultant (ICR, page 28).
- The Armenia's Road Safety Secretariat was established with support from a grant from the Bank administered Global Road Safety Facility (GRSF), with a director and full time staff (ICR, page 11).
- A data collection unit was established in the Armenian Road Directorate as targeted (ICR, page iv).
- A Double Bituminous Treatment (DBST) pavements contract (including for rehabilitation works and routine and winter maintenance was piloted on two sections covering 16.5 km of roads. The ICR (page 12) reports that this pavement standard was relatively inexpensive, as compared to the traditional asphalt concrete standards and pavement layers.
- One Pilot "safe village" program was implemented as targeted for supporting rural communities to implement road safety measures. The program supported the villages in installing road safety measures, by making them eligible for funding, only if they had prepared and implemented road safety awareness campaigns. (ICR, page 6).
- The new road geometric design standards which was included at second additional financing was cancelled.

Outcome:

- 39,855 person day/month of temporary construction jobs were created as compared to the target of 36,650 person day/month. Of these 60-70% went to people from local villages and 70% of them were unskilled, Since on average US$ 500 per month was paid to the workers, this represented a direct income transfer of approximately US$5.0 million to workers (ICR, page 17). Nine of the 23 contractors chosen did not have any other contracts than those offered under the stimulus package provided to mitigate the impact of the global financial package, and rural roads contracts accounted for 22 to 27% of the gross revenue of the contractors. (ICR, page 5).
- The travel time on the rehabilitated roads decreased by 58.5% as compared to the target of 20%.
- Transport costs, measured using the Highway Development and Management Model (HDM) indicated that these costs decreased by 25.8% as compared to the target of 20%.
- 51.5% of the rural population had access to all season roads at project closure although the baseline data was not available.
- According to the statistics provided by the team, in 2013 the number of fatal casualties as a result of road accidents was 316 as compared to 315 in 2012 and 327 in 2011. Although the decrease does not seem to be significant, the team leader clarified that more crashes were being reported as a result of the introduction of a compulsory motor vehicle insurance for supporting insurance claims. The team also reported that road crashes were recorded by video cameras (90% of which were installed in Yerevan as part of the project), and that the number of fatal crashes was 29 between January - March 2014, as compared to 39 between January- March 2013. • A qualitative social assessment survey was conducted at project closure on 48 focus group in eight rural communities in eight regions. (ICR, page 36-38). The methodology was to compare people's views in the regions that benefited from the projects and those of the regions that did not benefit from the project. While 51% of the former group reported the roads to be in good or excellent condition, as compared to 12% of the latter group. 41% of the former reported the transportation services in the rehabilitated roads to be good or excellent as compared to 22% of the latter. 91% of the former group reported

improvement in market access as compared to 71% of the latter group. 88% of the former group reported that the rehabilitated roads facilitated their visits to shops and other purposes as compared to 72% of the comparison group.

5. Efficiency:

An economic analysis was done using the Highway Development and Management Model (HDM-4) on approximately 153 km of lifeline roads both at appraisal and at completion. The main economic benefits were assumed to come through vehicle operating costs and travel time savings. The ex post Economic Rate of Return was 18.1%, very close to the ex-ante EIRR of 18.4%. The unit transport costs trucks computed using the HDM for the ex post valuation were US$ 0.40 per vehicle Km for with the project, as compared to US$ 0.54 for without the project. This represented a 25.8% reduction in transport cost for medium trucks as compared to the target of 20% (ICR, page 17). There were no cost overruns, and although the project closing date was extended by three years, this extension was for completing the expanded scope of the project, and therefore did not affect the efficiency of the project.

Efficiency is rated **Substantial**.

a. If available, enter the Economic Rate of Return (ERR)/Financial Rate of Return (FRR) at appraisal and the re-estimated value at evaluation:

	Rate Available?	Point Value	Coverage/Scope*
Appraisal	Yes	18.4%	44%
ICR estimate	Yes	18.1%	44%

* Refers to percent of total project cost for which ERR/FRR was calculated.

6. Outcome:

Overall outcome is rated as Satisfactory. The relevance of the objective is high and relevance of design is Substantial. Both efficacy and efficiency are rated as Substantial.

Although the outcome targets were revised twice during implementation, the split rating method was not applied because this did not affect the overall outcome rating.

a. Outcome Rating: Satisfactory

7. Rationale for Risk to Development Outcome Rating:

There is a risk that the project development objective may not be sustained due to inadequate allocation of funds for routine and periodic maintenance of the rehabilitated roads. Although the Ministry of Transport and Communication has been increasing its budgetary resource allocation, it is not clear whether the amount allocated would be sufficient for both routine and periodic maintenance needs since in 2012 the amount allocated was insufficient for covering routine maintenance, let alone periodic maintenance.

Also, although there have been positive steps taken on addressing road safety issues (such as approval of a National Road Safety strategy, adoption of a five year plan etc.) it is not clear if these activities would be implemented in view of the weak institutional arrangement, such as the under funding and under staffing of the Road Safety Secretariat (ICR, page 21).

a. Risk to Development Outcome Rating: Significant

8. Assessment of Bank Performance:

a. Quality at entry:

Quality at entry is rated as **Satisfactory**. Since the original project had to be prepared fairly quickly in response to the urgent request from the Government in the wake of the global financial crisis, it required an experienced team. The project preparation which was initiated in late 2008, and approved by the Board on February 24, 2009, became effective about two months later on April 20, 2009. The project roads to be rehabilitated had already been identified by the Millennium Challenge Corporation (MCC) as priorities and were in areas facing increasing unemployment. Road designs prepared by MCC were adapted to current road conditions and traffic surveys, and revised to conform to the standards of European roads (ICR, page 8).

Appropriate risk mitigation measures were incorporated through a covenant included in the loan agreement- such as requiring the government to deposit 20% of the counterpart funding within two weeks after the ratification of the Loan Agreement, to address the possibility of delays associated with counterpart funding (ICR, page 11). The World Bank ensured project readiness by having an implementing agency which was experienced in managing World Bank and other transport projects financed by International Financial Institutions (ICR, page 9).

According to the ICR the Safeguard policies were adequately addressed at the appraisal stage (discussed in section 10a).

Quality-at-Entry Rating: Satisfactory

b. Quality of supervision:

Quality of supervision is rated as **Satisfactory.** Since it was IDA Fast Track Facility operation requiring fast disbursements, supervision was intensive and the project was closely monitored during the project implementation phase (ICR, page 8). While the initial road rehabilitation activities responded to the emergency needs of creating temporary employment in the wake of global crisis, the supervision team helped in expanding project scope to include road safety and institutional strengthening dimension through two successive additional financing in a short time (ICR, page 8).

The supervision team was fully engaged with the client during the implementation phase. In keeping with the emergency nature of the original project, supervision missions were more frequent in 2009 (about three missions). Missions since then were on average twice a year, The supervision team addressed the implementation problems in a proactive manner (ICR, page 22) but they could have engaged more with the Government to ensure the sustainability of the roads through provision of adequate maintenance funds.

The supervision team had as many as five task team leaders which affected continuity and the Bank could have reduced the processing burden by combining the two additional financing in a single operation (ICR, page 22).

Quality of Supervision Rating: Satisfactory

Overall Bank Performance Rating: Satisfactory

9. Assessment of Borrower Performance:

a. Government Performance:

Government Performance is rated as **Moderately Satisfactory.** The Government was highly committed to the project development objective right from the preparatory phase. This enabled the project to be prepared and approved by the Board within two months. Since the government had already adopted a Rural Infrastructure Strategy and Action Plan and had identified the priority lifeline rural roads for rehabilitation, the project could be implemented immediately after effectiveness. During implementation, when counterpart funds were delayed due to the quicker than anticipated implementation of civil works, the Government resolved the issue through larger counterpart allocations. The government commitment was further evidenced by their request for a follow up project to further rehabilitate 170 km of lifeline roads that was approved by the Board on January 31, 2013 (ICR, page 10).

The Government however was not able to make available adequate budgetary resources for road maintenance as stipulated in the legal covenant (ICR, page 10).

Government Performance Rating Moderately Satisfactory

b. Implementing Agency Performance:

Implementing Agency Performance is rated as **Satisfactory.** Although the Ministry of Transport and Communication (MoTC) had the overall responsibility for implementing the project, the Ministry had delegated the responsibility to a Transport Project Implementation Unit. This institution had experience in implementing both externally financed projects and transport projects executed with local financing (ICR, page 9). The unit was headed by an experienced engineer with knowledge of both Bank and Armenian procedures. The implementing agency handled the safeguard and fiduciary issues with no major problems (discussed in section 11).

During the implementation phase when unit became overburdened with additional responsibilities (unrelated to Bank funded projects) and hence could not respond expeditiously to the Bank requests, the unit resolved the issue through hiring additional staff (ICR, page 11).

Implementing Agency Performance Rating : Satisfactory

Overall Borrower Performance Rating : Moderately Satisfactory

10. M&E Design, Implementation, & Utilization:

a. M&E Design:

Responsibility for the M&E rested with the Transport Project Implementation Unit. The M&E design which included specific and appropriate indicators for both the physical works component and the institutional strengthening were fairly simple and easy to collect.

Two sector indicators were introduced in 2009 as per Bank requirements (roads in good or fair condition as a share of total classified roads and share of rural population with access to an all season road). (ICR, page 13). The M&E did not include any indicators related to providing for road maintenance.

b. M&E Implementation:

The only details provided in the ICR on M&E implementation were quarterly and semiannual reports on implementation progress submitted to the Bank.

c. M&E Utilization:

While the ICR does not provide details on M&E utilization, the task team clarified that the data collection unit established by the Armenian Roads Directorate continues to collect and monitor data on the condition of road networks.

M&E Quality Rating: Modest

11. Other Issues

a. Safeguards:

The project was classified as Category B for Environmental Assessment purposes (OP/BP 4.01), and partial assessment was required. In addition, one safeguard policy was triggered: Involuntary Resettlement (OP/BP 4.12). The ICR (page 14) reports that an Environmental Management Plan (EMP) was developed at the project preparation stage, and site-specific EMPs were discussed with local communities residing close to road sections to be rehabilitated, and appropriate features were incorporated in the project design.

There was an incident in 2009 when some shortfalls in the compliance of the EMP in the quality of arranging drainage infrastructure and sidewalks but the issue was adequately addressed. The ICR (page 14) reports that there was no resettlement or land acquisition.

b. Fiduciary Compliance:

Financial Management: According to the ICR (page 15), the implementing agency's financial management performance was deemed to be adequate. Annual financial audits were unqualified. The government provided the counterpart funding for the most part in a timely fashion, except in 2010 when there were some delays due to the delayed approval of the budget.

Procurement: Arrangements: According to the ICR (page 15), all procurement activities related to works contracts were deemed to be satisfactory and there was no case of misprocurement.

c. Unintended Impacts (positive or negative):

d. Other:

12. Ratings:	ICR	IEG Review	Reason for Disagreement/Comments
Outcome:	Satisfactory	Satisfactory	
Risk to Development Outcome:	Significant	Significant	
Bank Performance:	Satisfactory	Satisfactory	
Borrower Performance:	Moderately Satisfactory	Moderately Satisfactory	
Quality of ICR:		Satisfactory	

NOTES:
- When insufficient information is provided by the Bank for IEG to arrive at a clear rating, IEG will downgrade the relevant ratings as warranted beginning July 1, 2006.
- The "Reason for Disagreement/Comments" column could cross-reference other sections of the ICR Review, as appropriate.

13. Lessons:

.The ICR draws the following lessons:

- Project readiness could enable quick implementation of civil works and thereby contribute to providing temporary employment and quick economic support to rural areas hit by financial crisis.
- Incremental improvements can be made during project implementation (such as incorporating road safety features) by adjusting to changing conditions.
- Road safety audits can be successfully incorporated with road construction and rehabilitation works when there is government ownership. And support for road safety programs can be obtained from communities, which consider road safety a major problem.

14. Assessment Recommended? ○ Yes ● No

15. Comments on Quality of ICR:

The ICR systematically reported both outputs and outcomes of the project, and its assessment of the achievement of the project development outcome was evidence based. The ICR was also concise and consistent with the guidelines. However, there are areas where the ICR could have provided more details, for instance, the important road safety features of the project which was very brief. The overall quality of the ICR is rated as **Satisfactory.**

a.Quality of ICR Rating: Satisfactory