FINAL REPORT

Financed by the International Bank for Reconstruction and Development (Loan Agreement #8229-AM, loan Agreement #8523-AM and loan Agreement #8957-AM) and the RA Government

Lifeline Road Network Improvement Project (LRNIP)Implemented with the support of the World Bank

Yerevan
2022

Content

Abbreviations

GDP	Gross domestic product
km	kilometer
LRIP	Lifeline Road Improvement Project
LRNIP	Lifeline Road Network Improvement Project
LRNIP AF	Lifeline Road Network Improvement Project Additional Financing
LRNIP AF2	Lifeline Road Network Improvement Project Additional Financing 2
Mln.	Million
MTAI	Ministry of Territorial Administration and Infrastructure
PDO	Project Development Objective
RA	Republic of Armenia
RAMS	Road Assets Management System
RD	Road Department Fund
RP	Road Police
SNCO	State non-commercial organization
TA	Traffic accident
UNDP	United Nations Development Programme
UNDP SDG	United Nations Development Program Sustainable Development Goals
United Nations	United Nations
USA	United States of America
WB	The World Bank

Explanatory Vocabulary of Terms and Definitions Used

Additional financing	An additional financial credit facility for LRNIP provided by the WB through the relevant loan agreement. In total, there were 2 additional financings.
Beneficiary community	These are the communities through whose administrative territory the improved parts of the rehabilitated roads pass.
Black spots	The accident-prone sections of roads where traffic accidents occur frequently and which need to be improved.
Borrower:	In this context, the Republic of Armenia.
HDM4:	Professional platform/software, through which economic analysis of roads to be rehabilitated are carried out.
Implementing agency	An authorized agency within the framework of LRNIP, which is responsible for the coordination, management, monitoring, fiduciary and procurement functions of the Project implementation process. During the implementation of the project, structural changes were made to the implementing agency, and currently the successor is the "Road Department" fund.
In-depth interview	A qualitative method of collecting primary data, which involves individual interviews with representatives of the sphere, during which questions related to the professional topics were discussed.
Internal rate of return	It is the discount rate at which the project's net present value (NPV) is zero. The net present value is the difference between the sum of the initial investment and the sum of the discounted future operating flows, in the case of a positive value of which the investment can be considered as paid-back.
Life-line Road	These are the roads that provide at least one transportation link between the community and the main road or between the community and the regional center.
Line-Ministry	Authorized state body that coordinates and supervises the activities of the LRNIP, LRNIP AF and LRNIP AF2. As of the end of the project, that authorized body is the RA Ministry of Territorial Administration and Infrastructures.
Loan agreement	Loan agreements concluded between the Republic of Armenia and the World Bank, which regulate all the terms of the LRNIP, LRNIP AF and LRNIP AF2

Organizations providing consulting services or consulting organization	Organizations and individuals selected in accordance with procurement procedures within the framework of the LRNIP and who have provided consultancy services.
Post-project research or stage	Social monitoring and evaluation survey conducted after the completion of road improvement works within the frameworks of the LRNIP, LRNIP AF and LRNIP AF2.
Pre-project research or phase	A social monitoring and assessment survey carried out within the framework of the LRNIP, LRNIP AF and LRNIP AF2 before the start of road improvement works.
Primary data	The data and information that are not available in public sources (Internet, reports, documents) and which are collected from primary sources.
Project	In terms of this report, the collective name of LRNIP, LRNIP AF, LRNIP AF2
Project Design	Program documents defining the goals, indicators, actions, and expected results of the LRNIP, LRNIP AF and LRNIP AF2, which are part of the respective loan agreements.
Project Development Objective	Project Objective defined for the LRNIP, LRNIP AF and LRNIP AF2, which is specified by the loan agreements and program documents.
Road Assets management system	Road network management IT system applied to network management and includes a number of modules such as road network asset inventory and management system, monitoring system, project system, hotline, etc.
Secondary data	The data and information already collected and posted on the Internet, reports, documents and other open sources.

1. Summary

Brief information about the project

Project name	**Lifeline Road Network Improvement Project**
Project start	11.02.2013
Project completion	31.12.2022
Loan agreement	Agreement 8229-AM dated 11.02.2013: "Lifeline Road Network Improvement Project" (LRNIP), the total cost - 45 mln. USD. Agreement 8523-AM dated 26.08.2015: "Lifeline Road Network Improvement Project Additional Financing" (LRNIP AF), total cost - 40 mln. USD. Agreement 8957-AM dated 10.10.2019: "Lifeline Road Network Improvement Project Additional Financing 2" (LRNIP AF2), total cost - 13.4 million Euro.
Project development objective	To improve access of rural communities to markets and services through the upgrading of the lifeline roads, as well as strengthen the capacity of the line ministry to enable efficient management of the lifeline road network
Project components	Component 1 - Improving Lifeline Roads Component 2 - Project management and institutional strengthening
Authorized body	RA Ministry of Territorial Administration and Infrastructure
Implementing agency	Road department fund

This report was developed by the implementing agency, and is the Implementation Completion and Result Report of the WB-supported Lifeline Road Network Improvement Project (LRNIP) (Loan agreement #8229-AM, Loan agreement #8523-AM and Loan agreement #8957-AM). WB financed Project is one of the longest projects and is one of the most important system-building tasks implemented in Armenia. The Project has always been in the focus of attention of the Government of the Republic of Armenia, the authorized body and the WB, thanks to which high efficiency was ensured and all goals and intermediate indicators were achieved. It should be noted that following some systemic changes and due to intricacies, a few activities were implemented later than they were scheduled (details are presented in the 5.3 chapter).

No	**Loan agreement**	**Effective date**	**End date**			
			Designed	**Extension 1**	**Extension 2**	**Extension 3**
1	8229-AM	11.02.2013	30.06.2017	30.12.2019	30.12.2021	31.12.2022
2	8523-AM	26.08.2015	30.12.2019	30.12.2021	31.12.2022	
3	8957-AM	10.10.2019	30.12.2021	31.12.2022		

However, owing to the effective work of the Line-Ministry, implementing agency and the WB, the Project managed to record satisfactory progress. This is covered in detail in Chapter 5 of the report.

To evaluate the Project, the WB guidelines for project completion reports were used as a basis, and the evaluation was carried out in accordance with the evaluation scales specified in the guidelines (See “Methodology” chapter).

As a result of the Project review the assessments were made about which information is provided in Chapter 6 (“Evaluation of Implementation of Each Component”), Chapter 7 (“Institutional, Financial and Socio-Economic Impact”), Chapter 8 (“Project Sustainability Risk Assessment”) and Chapter 9 (“WB and Borrowers Performance Evaluation”).

2. Introduction

The need for the Project implementation was determined by the socio-economic situation in the Republic of Armenia. Following the global economic crisis and due to a severe economic downturn in RA in 2009, it became one of the most severely affected countries in Europe and Central Asia. The economy resumed growth in 2010; however, compared to double-digit growth in the years prior to the crisis, the growth remained low. In response to the economic crisis, the Armenian government initiated a recovery strategy directed towards alleviation of the effects of the poor state of rural infrastructure and unemployment. It was evident that in order to ensure sustainable economic growth in the post-recession stage, it was necessary to apply more comprehensive approaches with the involvement of all sectors. The agricultural sector was seen by the government as one of the main targets of recovery. It should be noted that access to markets in rural areas was limited due to bad road conditions. This hindered trade in agricultural products, and as a result, there were essential crop losses in some communities due to the failure to deliver the produce to the market in time. This was one of the circumstances that substantiated the need for the Project. Lack of well-equipped and safe road infrastructure remained one of the key problems in RA.

Summarizing the above, it is obvious that the lifeline road network development would improve infrastructure in rural areas, thus providing access to markets and boosting economic growth in the country.

Due to the above-mentioned situation, the implementation of the LRNIP was aimed at solving those problems and challenges, developing the RA road network, as well as at continuous development of the institutional and human resources of the authorized agencies.

In addition, it should be noted that the basis for the LRNIP was also the positive results obtained in the scope of LRIP funded by WB 2009-2013.

A number of activities were designed by the loan agreements of the LRNIP. for which the following funds were allocated:

N:	Activity type	Loan Agreement #8229-AM USD		Loan Agreement #8523-AM USD		Loan Agreement #8957-AM Euro	
		Loan amount provided	Loan amount allocated	Loan amount provided	Loan amount allocated	Loan amount provided	Loan amount allocated
1	Construction works	38,950,500.00	38,273,006.41	34,006,000.00	33,921,344.07	9,400,000.00	10,639,464.14
2	Consulting services	4,642,000.00	4,208,537.73	4,742,000.00	4,675,086.41	3,266,500.00	1,719,281.29
3	Operational expenses	815,000.00	691,953.53	800,000.00	721,810.32	700,000.00	470,699.54
4	Goods	400,000.00	353,251.20	352,000.00	581,759.20	-	-
5	Business trip, training	80,000.00	2,407.61	-	-	-	-
	That's all	44,887,500	43,529,156	39,900,000	39,900,000	13,366,500	12,829,445

N:	Activity type	Loan Agreement #8229-AM USD		Loan Agreement #8523-AM USD		Loan Agreement #8957-AM Euro	
		Co-financing provided	Co-financing allocated	Co-financing provided	Co-financing allocated	Co-financing provided	Co-financing allocated
1	Construction works	9,737,625.00	9,566,266.42	8,502,000.00	8,448,479.67	2,350,000.00	2,656,875.11
2	Consulting services	1,160,500.00	1,043,757.21	1,190,000.00	1,168,426.46	825,000.00	428,988.95
3	Operational expenses	203,750.00	173,029.34	200,000.00	182,283.95	175,000.00	117,379.30
4	Goods	100,000.00	87,764.68	88,000.00	145,437.14	-	-
5	Business trip, training	20,000.00	601.90	-	-	-	-
	That's all	11,221,875	10,871,420	9,980,000	9,944,627	3,350,000	3,203,243

The above activities are distributed in the Project between two thematic components, which are presented in the table below.

Component 1 Improvement of lifeline roads	
A subcomponent	**Result:**
1. rehabilitation of lifeline roads of total 450 km length	1. A total of 453 km of lifeline roads were repaired, of which within the framework of the LRNIP project 211.41 km during 2013-2017, within the framework of the LRNIP AF project 181.05 km during 2016-2020 period, and within the framework of the LRNIP AF2 project 60.54 km during 2020-2022.
2 . Technical audit of road rehabilitation works	2. The technical audit of road rehabilitation works has been carried out.
3 . Improvement of " Black spots " of the roads	3. Improvement of "Black spots" of 14 accident-prone areas of roads.
4 . Installation of traffic signs	4. A total of 3,892 traffic signs were installed
5 . Installation of traffic meters	5. 30 traffic meters were acquired.
Component 2 Project Management and Institutional Strengthening	
A subcomponent	**Result:**
1 . Crash Data Collection and Management System	1. The Crash Data Collection System (HDM4) has been acquired, data on roads with a total length of 7,500 km has been collected, uploaded to the system and is being used.
2 . Developing a lifeline road network development plan	2. The lifeline road network development plan was developed and accepted by the authorized agency.
3 . Road safety education and public awareness campaign	3. Implementation of road safety education and public awareness campaigns. A road safety education and public awareness campaign was carried out in the schools of 100 beneficiary communities of the project, to which about 7,000 people participated.
4 . Development Risk Assessment of Natural Hazards to Road Infrastructure, which was submitted and accepted by the authorized agency.	4. Development of the risk assessment report of natural hazards to road infrastructure, which was submitted and accepted by the authorized agency.
5 . Social Monitoring and Evaluation Study	5. Social monitoring and evaluation studies were conducted throughout the project and were used to measure the progress of the project.
6 . Recruitment of interns	6. 14 interns completed a 6-month internship, 3 of them were hired by the "Road Department" fund.
7 . Audit of project accounts	7. Regular implementation of financial audits of project accounts.

3. Project Background

Due to its economic and geographic features Armenia faces significant transportation challenges. Armenia is a landlocked country located in Eurasia, in a strategically important position in the South Caucasus region. The country borders four countries: Georgia, Iran, Azerbaijan and Turkey, however, only two of these borders, the southern border with Iran and the northern border with

Georgia, are open. In addition, Armenia has a very complex topography and climate conditions. As a mountainous country, it has very low winter temperatures and heavy snowfalls with high intensity. Altogether, these factors result in high transport and infrastructure maintenance costs. As of 2008, the total length of the non-urban road network of RA was 7,704 km[1] with 40% of the roads still in need of improvement. Only less than half were in good condition, the reason for which might be the fact that most of the road network in Armenia was built in the 1960s and 1970s.

About 93 percent[2] of the Armenian total network was asphalted by 2011, which is high, as compared with that in other developing countries and almost comparable with the share of asphalted roads in most European countries. However, since independence, most republican and local roads had deteriorated, with only 48 percent of the total road network and 60 percent of the major (interstate and republican) roads in good condition. Armenia's road network density was about 2.6 km per one thousand inhabitants and 279 km/sq.m[3]., which was very low as compared to other countries in the region and partly explained the difficulties in provision of basic access to the rural population.

In 2008, the government launched the Lifeline Road Improvement Program by introducing the concept of lifeline roads. The Program aimed to boost economic growth and contribute to poverty alleviation by improving some roads of vital importance. The government established a lifeline road network of about 4,000 km. According to the lifeline road concept, there should at least be one road accessing all 960 communities[4] in Armenia.

To improve the road network, the WB funded LRIP, which aimed to upgrade the roads of vital importance in selected areas, create jobs for local people in road construction and improve access to markets. The roads were selected from the list of lifeline road sections defined by the RA Government.

Among other indicators, as mentioned above, successful implementation of the *LRIP* itself was a good substantiation for the WB for the implementation of LRNIP. It was envisaged that LRNIP would strengthen the capacity of line ministry and implementing agency in road asset management system, which would, in its turn, among other purposes contribute to increasing the efficiency of public spending. Finally, LRNIP developed tools to strengthen capacities of main actors, the sector's financial sustainability and test more effective contract models enabling better road maintenance and safety management.

[1] https://rise.esmap.org/data/files/library/armenia/ENERGY%20EFFICIENCY%20(Armenia)/EE.33.1.-Armenia-Transport_Strategy_2020.pdf

[2] https://documents1.worldbank.org/curated/en/294861468012635157/pdf/665330ESW0P1200anagement0Armenia0HK.pdf

[3] https://documents1.worldbank.org/curated/en/294861468012635157/pdf/665330ESW0P1200anagement0Armenia0HK.pdf

[4] The Republic of Armenia has almost finished the process of enlargement of communities and currently there are 73 enlarged communities in Armenia.

4. Project development methodology

During the preparation of the report, a number of discussions were held with the relevant officials, the main purpose of which was to discuss the main directions, present methodological approaches, clarify organizational issues. All documents related to the programs were clearly classified and collected, some documents were obtained from the WB website, as well as available sources. The list of the collected and reviewed documents is shown in Appendix 5.

In the preliminary stages of the development of the report, the entire package of the documents was reviewed. The results and result indicators envisaged by the Project documents were compared with the actual results and result indicators, and relevant conclusions were drawn.

In addition to the review of secondary data, during the development of the report, primary data were also collected: expert interviews were conducted with key Project beneficiaries and stakeholders for primary data collection, in particular with implementing agency, construction contractors, consultants, officials of regional governorates, representatives of beneficiary communities and etc.

Through expert interviews the information about the relevance of the project, implementation process and effectiveness, existing challenges, applied methods and etc. was collected.

In this report, primary data has been supplemented with secondary data, as well as expert assessments and conclusions.

The report was developed by using an evidence-based approach. That is, all results and result indices must be substantiated by factual evidence.

The impact and sustainability of the achieved results were assessed. The "counter-evidence-based" impact assessment method was used to assess the impact of the Project from technical, economic, social, and environmental perspectives. In addition, the lessons learned were found out, future-oriented recommendations were developed which should be taken into account during the implementation of similar projects.

In order to evaluate the program, a number of approaches used by various international organizations were considered. However, it was decided to apply the following methodological approaches, which makes it possible to give clear and measurable assessments to the implementation of the planned activities and the result indicators of the project components and sub-components.

Table 1 Evaluation Criteria

Criteria	Description of the criteria
Highly satisfactory	In terms of achieving goals and results, there are **no negative deviations** at all in terms of their effectiveness and compliance.
Satisfactory	In terms of achieving project objectives, results in general, as well as in terms of their effectiveness and compliance, there are **some small negative deviations**.
Moderate satisfactory	In terms of achieving project objectives, results in general, as well as in terms of their effectiveness and compliance, there are **moderate negative deviations**.
Moderate unsatisfactory	In terms of achieving project objectives, results in general, in terms of their effectiveness and compliance, there are **significant negative deviations**.
Unsatisfactory	In terms of achieving project objectives, results in general, as well as in terms of their effectiveness and compliance, there are **major negative deviations**.
Highly unsatisfactory	In terms of achieving project objectives, results in general, as well as in terms of their effectiveness and compliance, there are **strict and numerous negative deviations**.

5. Factors that Have a Major Impact on Project Implementation and Results

5.1 Contributing factors

5.1.1 Correspondence to strategic documents

Due to the positive results of the implementation of the loan agreement (#8229-AM), additional financing loan agreements were signed with WB. The proposed additional financing was in line with the priorities of Armenia's 2015-2025 development strategy and one of the WB's Country Partnership Strategy clusters: that is, "Support competitiveness and job creation".

5.1.2 Selection of roads

One of the requirements of the project was the use of a justified, systematic and institutional model and criteria for the selection of roads. For this purpose, the criteria for selecting the roads to be improved were developed and applied throughout the project. In particular:

- Rehabilitation of exclusively lifeline roads.
- Analysis of multi-criteria indicators, including:

o Internal Rate of Return (IRR) of road works,

o the number of beneficiary population of the road section,

o percentage of the population in the community that is in poor social condition,

o percentage of lifeline roads in the community that are in poor condition,

o traffic intensity and structure.

It is noteworthy that the Project not only gave great importance to the priority of road selection, but also carried out financial evaluations at all stages to estimate the economic efficiency of the investments.

5.1.3 Terms of reference for the implementation of activities planned by the components

Throughout the project implementation, all draft terms of reference (consulting services, procurement of goods, etc.) were discussed and agreed with the WB, as a result of which these documents had clearly defined requirements and effective mechanisms for ensuring progress, thus ensuring a high quality of service delivery.

5.1.4 Line ministry involvement

The role of the line ministry (currently the Ministry of Territorial Administration and Infrastructures of the Republic of Armenia) has played a big role in the success of the effective launch and implementation of the project, because it, as a sectoral policy maker, is well aware of the needs and problems of the sector and provided assistance to the implementing agency throughout the implementation of the whole project, closely cooperating also with the WB, coordinating the collection of the necessary data received from regional governorates, ensuring interdepartmental interaction as necessary, and etc.

5.1.5 Community involvement

The involvement of the beneficiary communities also had a significant positive impact on the implementation and results of the project[5]. Beneficiary communities were involved in a number of stages of project implementation and had the opportunity to participate in decision-making processes. In particular:

- During the project design works the opportunity to present their observations,
- Participated in public hearings and presented their position, etc.
- In accordance with the law, they provided design permits, approved the architectural design assignments, construction permits, accepted the works done.

[5] In total, LRNIP had 156 beneficiary communities.

5.1.6 Single international technical supervision

The project was the first of its kind in the Republic of Armenia, since the technical supervision of the implementation of the entire project was entrusted to the unified technical supervision, which has a number of advantages:

- Unified supervision allows to apply one standardized approach at all stages,
- It is much easier to control the work of one organization,
- Technical supervision by an organization with extensive international experience throughout project implementation ensures higher efficiency and sharing of international experience,
- Among other functions, also assisted in the study of project documents and, if necessary, in submitting a proposal to make changes in them.

5.2 Negative factors

5.2.1 The Impacts of COVID19 pandemics and 2020 war

Due to COVID 19 and the war situation, the Project faced a number of difficulties, in particular:

- Due to COVID 2019 restrictions, the suspension of LRNIP AF 2nd and 3rd year construction activities of 2020 year and the extension of the contracts for the road rehabilitation technical supervision.
- Delay of implementation of technical assistance that required international consulting experience (in particular, the consulting services for the development of a strategic plan for the lifeline road network)
- Delay of the *Safe Village* road safety educational campaign from the planed period due to COVID 19, as well as the martial law,
- Within the scope of road safety functions, put off the scheduled meetings and activities with the Traffic Police Mobilization of construction equipment and human resources of contractor organizations under martial law.

5.3 Project Changes and Reorganizations

As for Project changes, the one carried out within the PDO can be singled out. In the initial version (#8229-AM), the name of the ministry was clearly mentioned, namely, the Ministry of Transport and Communications of RA, while during the implementation of the Project, this ministry was reorganized and renamed twice. This is why the revised PDO was submitted and approved in April 2019, in particular to “Improve rural communities' access to markets and services through the upgrading of the selected critical roads, and to strengthen the capacity of the ministry responsible for roads to ensure effective management of the lifeline road network”. This can be

considered as a positive initiative, as this reorganization was introduced to mitigate the impact of the future possible systemic changes on the Project.

Besides that, the program has undergone a number of other changes.

- In the 8229-AM loan agreement, as amended on August 26, 2015, certain concepts were edited, and the end date of the agreement was extended until December 30 of 2019 instead of June 30 of 2017.
- In the 8229-AM loan agreement, as amended on June 13 of 2017, structural changes of the line ministry and the implementing agency were fixed.
- In the 8229-AM loan agreement, as amended on July 4 of 2019, some project changes were made, and the end date of the contract was extended until December 30, 2021.
- In the 8523-AM loan agreement, as amended on June 13 of 2017, structural changes of the line ministry and the implementing agency were fixed.
- In the 8523-AM loan agreement, as amended on July 4 of 2019, some project changes were made, and the end date of the contract was extended until December 30, 2021.
- On August 30, 2021, the validity periods of loan agreements 8229-AM, 8523-AM and 8957-AM were extended, setting the final deadline that is December 31, 2022.

During the implementation of the program, a number of structural changes were made, which were also reflected in all relevant project documents. Thus, two program implementation units operating within the Ministry of Transport, Communications and Information Technologies of the Republic of Armenia were reorganized and merged into one - SNCO "Transportation Program Implementation Organization". Subsequently, on December 26, 2019, the SNCO "Transportation Program Implementation Organization" of the Government of the Republic of Armenia (Resolution No. 1969-A) was renamed into the SNCO "Road Administration", and later, on 08/06/2021, by decision No. 1298-a, the state non-profit organization "Road Department" (state registration number 286.210.945286) was transformed into "Road Department" fund. It is noteworthy that, despite institutional changes, the main professional staff involved in the project has not changed much, as a result of which the institutional memory of the project was ensured and contributed to the normal course of the project.

6. Evaluation of Implementation of Each Component

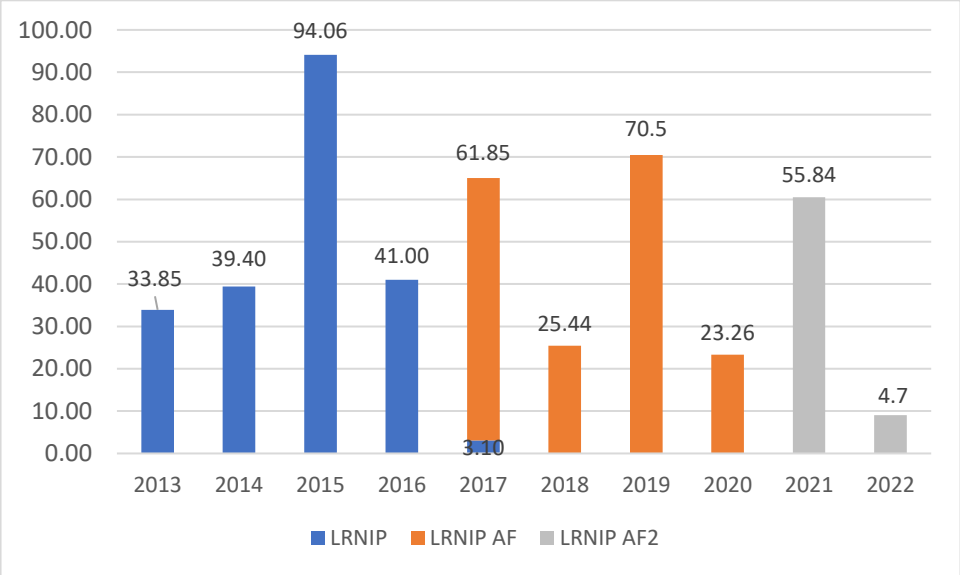
6.1 Component 1 - Implemented Works

Table 2. Evaluation of Component 1

Component 1 Lifeline road improvement	
Subcomponent	**Evaluation**
1. Rehabilitation of lifeline roads of total 450 km length	Highly satisfactory
2. Technical audit of road rehabilitation works	Satisfactory
3. Improvement of " Black spots " of the roads	Satisfactory
4. Installation of traffic signs	Satisfactory
5. Installation of traffic meters	Satisfactory

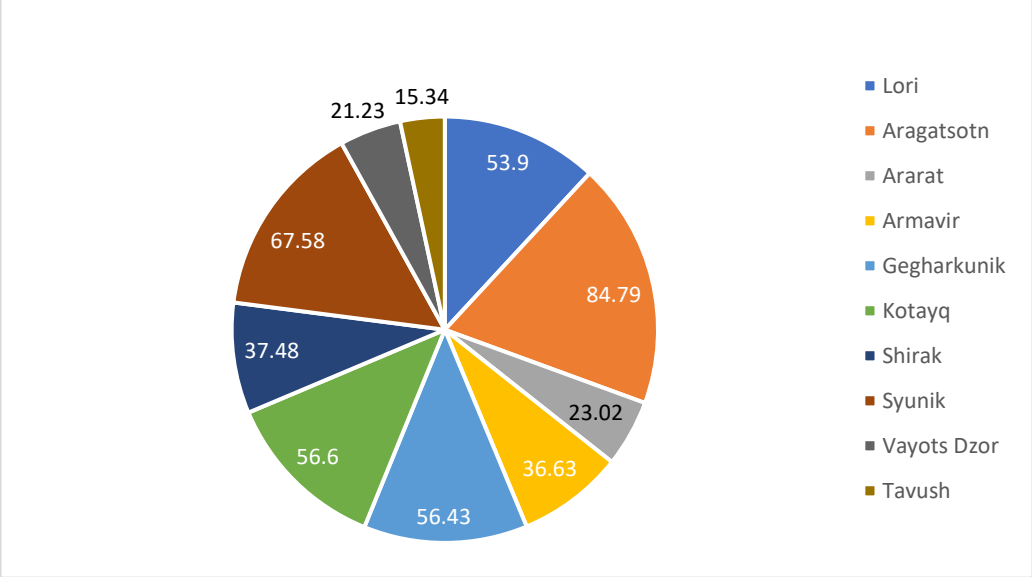
As of December 2022, a total of 453 km of road rehabilitation was finished under the Component 1. Distribution of the work implementation, as indicated in contracts, is shown in Figure 1.

Figure 1. Length of rehabilitated roads according to contracts and years



The project has been implemented since 2013, but most of the roads were repaired and putted into operation in 2015. This is due to the fact that in the first years of the project, preparatory and design works were also carried out. In addition, the construction works in a number of directions lasted a year and more, which justifies this picture. The fall in 2020 is also due to the restrictions applied during the COVID19 epidemic (construction works were stopped), as well as the war and martial law, also here it is necessary to take into account that the rehabilitation works of the LRNIP AF2 started in October-November of 2020.

Length of the rehabilitated roads by marzes



Out of the 12 construction works contracts (67.8 km total) reviewed under this component year-end implementation support mission, construction works on 11 contracts have been completed and are in the defect correction warranty phase. The "M6 - Yeghegnut - Debed" construction works contract was terminated due to the Contractor's significant violations . Regarding this section of the road, it was decided to complete the rest of the works with state funding. A tender for the selection of the contractor was organized, the contract was signed, and the implementation of the works has started and will be completed within the period specified by the contract.

Taking into account the existing logistical problems of the section of the Noravan-Goris-Vorotan-Syunik intersection of the M2 interstate highway in the Syunik Marz of the Republic of Armenia, it was predicted that the traffic intensity on the indicated section of the M2 interstate highway will be shifted and the load will drop 000 - km4 + 344 on the road section. Thus, in accordance with the new contract concluded with the aim of strengthening the carriageway of the specified section of the road, work was also carried out to install an additional layer of a/b coating on the carriageway of the 4.33 km section of the road.

In addition to the assessments given by the project implementer, the technical supervisor, during the field visits carried out within the framework of various project implementation support missions of WB, visual inspections of the rehabilitated roads were performed and it was recorded that the asphalt concrete cover of the roads is in good condition, and the road engineering solutions and structures are in correspondence with the designed ones. A gradual improvement

of road safety level has also been confirmed, in terms of the provision of sidewalks, safety elements, speed control, and etc[6].

It should be noted that a clear and wide-range methodology was used for the selection of roads. The road sections were ranked according to the priority index based on multi-dimensional indicators, including: (i) economic rate of return road works, (ii) number of population benefiting from the road section; (iii) the percentage of poor population in the community, and (iv) the percentage of lifeline roads in the community that are in poor condition. To each normalized indicator was given the following weights: 30% for economic payback, 25% for population, 25% for poverty and 20% for poor road network.

Of course, there is still work to be done in terms of the current maintenance of restored roads in beneficiary communities. In particular, it is necessary to be consistent in the issues of clearing roadside vegetation, and bushes that negatively impact visibility in the roadside areas and correct inefficient markings. During the organization of the clearing of bushes and other vegetation in the roadside areas, special attention must be paid to the environmental impact issues.

Under this component, 14 black spots were improved on seven interstate and republican roads of RA, including total of 3.92 km. repair works of road sections. The total cost of these contracts was 635,26 million AMD. Improvement works of black spots were carried out in Lori, Gegharkunik, Shirak, and Armavir marzes.

When including the accident-prone areas or the so-called black spots in the vital road network improvement plan, statistical data on traffic accidents provided by the Road Police were taking into account, as well as other factors were also compared: the number of residents of the settlements adjacent to the black spots, the intensity of traffic in these areas and etc.

Within this component, traffic intensity meters were purchased and provided, as well as road signs were installed which were supplemented with engineering structures ensuring safety on the interstate and republican roads of RA.

It should be noted that the Project recorded a fairly high efficiency in terms of the average cost of repairing works. In recent years, the average cost of 1 kilometer has approached to the cost of construction carried out with the funding of the RA state budget. This indicates that the state has begun to pay more attention to the quality of roads restored with the funding of the state budget, and has begun to apply higher standards and stricter control. This indicator of the Project is comparable with the experience of similar programs in other countries. For example, on the restoration of roads of total of 269.5 km within the relevant component of "Georgia Tertiary and Local Purpose Roads" (P148048 project) financed by the World Bank, 86.71 million US dollars

[6] Implementation Support Mission Memorandum, 07.11.2022-11.11.2022

were spent. In this case the average cost of 1 km is 321,740 USD, and within the framework of the Project in Armenia, the average cost is for 1 km is 267,750 USD.

6.2 Component 2 - Implemented Works

Table 3 Component 2 Evaluation

Component 2 Project Management and institutional strengthening	
A subcomponent	**Evaluation**
1 . Crash Data Collection and Management System	Moderate satisfactory
2 . Developing a lifeline road network development plan	Moderate satisfactory
3 . Road safety education and public awareness campaign	Satisfactory
4 . Development Risk Assessment of Natural Hazards to Road Infrastructure, which was submitted and accepted by the authorized agency.	Moderate satisfactory
5 . Social Monitoring and Evaluation Study	Highly satisfactory
6 . **Recruitment of interns**	Highly satisfactory
7 . **Audit of project accounts**	Satisfactory

6.2.1 Road Assets Management System (RAMS)[7]

The initial Project draft indicated that 4000km road should be surveyed and introduced into RAMS (Road Asset Management System), and these data should also be the basis for the selection of roads to be improved. Then, in 2017 following the negotiations between the line ministry (at that time Ministry of Transport, Communications and Information Technologies) and WB, an agreement was reached, according to which it was planned to survey 7500 km of road (all RA classified roads including interstate, republican and local/lifeline). The agreement was signed in the August 25, 2017 Mission memorandum (June 20-July 10, 2017 Implementation Support Mission). Moreover, this, as well as the following mission memorandums stipulated that the HDM-4 platform[8] should be used as the road property management system. During the implementation of the project, 2 licenses of HDM 4 version 2.09 were purchased and provided to the beneficiary/implementing agency for further use. In addition to that, in October 10, 2018 in order to survey 7500km of roads, a memorandum of understanding was signed between the line ministry (at that time Ministry of Transport, Communication and Information Technologies), the implementing agency (at that time Transport Program Implementation Organization NPO) and the Roads Administration of Armenia NPO, which states that the Roads Administration of Armenia NPO will be in charge of surveying 7500 km of roads. In the scope of this assignment profiles, vehicles, computers were purchased and provided to the *Armenian Road Administration*

[7] Roads Asset Management System

[8] https://www.piarc.org/en/PIARC-knowledge-base-Roads-and-Road-Transportation/Road-Safety-Sustainability/Road-Assets-Management/HDM-4-Software

NPO to carry out the task. The project also covered the fuel, accommodation, and other expenses. The task was to complete in 2018, but due to some objective and subjective reasons, the overall task, including survey and data collection, cleaning and import into RAMS, was completed in September 2019 (in this case, HDM-4). Overall 10 specialists were trained. During the implementation of the project, the economic calculations and analysis done through HDM-4 was used to make decisions on the selection of the lifeline roads that need to be improved. Moreover, during the implementation of the Project HDM-4 is also used for economic calculations and decision-making regarding roads financed by the state budget. It is important to mention that the state will continue using this tool after the completion of the Project, which ensures the high level of sustainability of that activity. From a perspective point of view, the RAMS developed on the basis of HDM 4 can be used by integrating with the general electronic management system of the RA road network (this system was developed by the funding of the RA state budget and is currently used for implementation of their functions by the line ministry and the "Road Department". This will automate the process of managing the entire road network and ensuring road safety through a number of tools, namely: road inventory, road monitoring, program development, road safety, hotline, construction interventions. This can also be considered as one of the achievements of the Project, since the synergy of the Project result and the state active actions was ensured.

6.2.2 Safe Village

In the scope of the Project, in those settlements where lifeline roads have been improved, roads adjacent to public facilities (educational institutions, healthcare institutions and etc) were provided with engineering structures for road safety. Together with traffic control measures, public awareness and educational campaigns have been done, aimed at contribution to the increase of road safety. This activity was implemented in 101 rural schools of beneficiary communities, to which7000 people have participated. All the envisaged target communities were involved in educational activities and 4800 school children from target schools out of 20,000 (24% of the total number of school children) were trained.

From the in-depth interviews with representatives of different target communities, it was verified that as a result of the implementation of the "Safe Village" component, had a positive effect on the behavior of the community population in matters of road safety.

6.2.3 Strategic plan for the lifeline road network

The technical support services contract with the consultant for this sub-component was signed in 2022 on April 1. Three deliverables have been presented since the start of service delivery: two online meetings and a set of recommendations regarding the finalization of the Plan. The

importance of reaffirming the proposed new methodology was once again emphasized by the consulting organizations, as it will be decisive in the process of implementing the sectoral strategy for the next 4 years. Thus, the purpose of the already developed strategic development plan is to present the implementation strategy of the 2022-2026 program for the maintenance and rehabilitation of lifeline roads of Armenia. In this document, the Consultant presented the methodology for the selection of main roads in 3 successive stages, which are:

- Definition of roads to be involved
- Multi-criteria analysis, MCA, in order to decrease the number of roads and prioritize them
- HDM 4 analysis, for further improvement of the project

For multi-criteria analysis, the Consultant developed 4 scenarios and 5 criteria, which are presented below:

Table 4. The criteria weight according to the scenarios

Criteria weight distribution				
Criterion	**S-1 Efficiency**	**S-2 Convergence**	**S-3 Resilience**	**S-4 Balanced**
Road Performance	10 %	10 %	10 %	20 %
Traffic	30 %	10 %	10 %	20 %
Accessibility	30 %	30 %	30 %	20 %
Social	10 %	30 %	20 %	20 %
Environmental Risk	20 %	20 %	30 %	20 %

It should be noted that this document is the basis for the effective development and implementation of future programs, as both the types of roads according to the criteria and their financial analyzes are presented in depth here. In addition, it is important that the state studies the presented results and applies them in future similar projects and/or for the selection of roads to be repaired by the funding of state budgets.

6.2.4 Crash data collection and management system

Within the framework of this component, a number of meetings, working discussions, as well as official correspondences took place regularly with the participation of the line ministry, WB partners, the Republic of Armenia, the "Road Police" service of the RA Police. According to the agreements reached during the meetings and discussions, WB partners performed a comparison and analysis of the statistical data collection system of road traffic accidents used by the RO and the CADaS document of the European Commission. As a result, "UPDATED LIST OF CRASH DATA SYSTEM LANDMARKS BASED ON CADAS STANDARD" was prepared, in which new data were included for inclusion in the existing crash data form (record card) in the traffic police / patrol service.

- However, the implementation of this activity was suspended as per the agreement reached between the line ministry and WB. This has, among other facts, a number of other subjective factors, in particular: Due to the reforms of the police system, the Patrol Service was introduced, which, in addition to other functions, also performs the functions of ensuring road safety,
- In the summer of 2022, the Law of the Republic of Armenia “On Criminal Procedure” came into force, which provides that the term “preliminary investigation” is removed, as a result of which the police will no longer collect data at the scene of the incident, and this function will be performed by the structures performing investigative functions.
- Appropriate software has been created in the patrol service, and based on the goals, crash data should be collected through this new software, which is still in the final stage of development.

However, it is encouraging that during 2022 the WB team continued the communications on road safety and met with the UNDP SDG Innovation Lab, which is now carrying out complementary work on road safety, within the framework of which it is planned to develop a road safety analytical platform, through which it will be possible to analyze "black spots". The aim is to analyze data on accidents in the country in order to improve the decision-making process in the field of highway safety. The WB has agreed with the Lab team to present the developed tool to all road safety stakeholders and further coordinate the road agenda.

6.2.5 Risk Assessment of Natural Hazards to Road Infrastructure

The purpose of the technical assistance was to determine the sites or sections of the RA road infrastructure that are vulnerable to natural hazards (including climate change), such as landslides, rock falls, floods, mudslides, and avalanches, and to create an appropriate basis for considering the impact of natural hazards in the management of the road sector. This task was accomplished through 5 activities

1. Collection, analysis and assessment of priority marzes subject to natural disasters in Armenia and development of a methodology for assessing the vulnerability of the road network to natural disasters (including climate change),

2. Recommendations regarding the adaptation of the impact of natural disasters in the management of road assets and relevant normative documents / priority investment plan,

3. Experimental application of the proposed approach for the roads of the LRNIP project and development of corresponding GIS maps.

4. Development of vulnerability analysis and emergency response plans for major interstate and national roads;

5. Knowledge dissemination and exchange workshops.

All the planned reports were prepared and presented by the consultant, including the "Final Report" and the "Guideline for Vulnerability Analysis of RA Road Network and Emergency Response", as well as the planned knowledge dissemination and exchange workshop was organized and held, in which RA concerned departments participated. , regional governorates and other specialized organizations.

In terms of this action, it is very important to carry out continuous actions so that this methodology is also applied in the future within the framework of similar projects and contracts implemented by the state, ensuring the sustainability of this result.

6.2.6 Social monitoring and evaluation

The final report on social monitoring and evaluation summarizes the main results of a study conducted in 85 communities close to rehabilitated road sections within the framework of LRNIP-AF and LRNIP-AF2. According to the results of the study, the consultant tested 2 group of hypotheses (comparing the results of pre-project and post-project surveys) . The results of the study show that almost all short-term hypotheses are somewhat confirmed (see Table 5) and medium-term hypotheses are likely to be changed in the medium term, but will not to be reflected in the data collected as a result of post-project research. They may be reflected in future studies a few years after the rehabilitation of roads.

Table 5. Summary of LRNIP AF, LRNIP AF2 projects hypotheses

	LRNIP AF			**LRNIP AF2**
	Phase 1	**Phase 2**	**Phase 3**	**Phase**
Short-term hypotheses				
Decrease of transportation costs (including that of public transport) and time spent on roads	Confirmed	Partially confirmed	Confirmed	Confirmed
Improved access to healthcare, education	Confirmed	Partially confirmed	Partially confirmed	Partially confirmed
Increase of satisfaction with road conditions	Confirmed	Confirmed	Confirmed	Confirmed
Decrease in transport maintenance cost	Partially confirmed	Partially confirmed	Partially confirmed	Partially confirmed
Less problems with the usage of roads depending on weather conditions	Partially confirmed	Mostly confirmed	Confirmed	Partially confirmed
Decrease of average number of days the road is blocked	Confirmed	Confirmed	Partially confirmed	Not confirmed yet
Improved access to markets	Partially confirmed	Confirmed	Partially confirmed	Confirmed
Medium-term hypotheses*				
Improvement of population's health	Confirmed	Confirmed	Partially confirmed	Partially confirmed

6.2.7 Recruitment of female trainees

One of the evaluation indicators for component 2 relates to the participation of eight female graduates in a six-month paid internship program in engineering, road safety and/or related professional fields. In this context, it should be noted that since April 2021, 9 female and 5 male trainees have joined the RD team on a competitive basis and successfully completed their internships in November 2022. This agreement was reached between the National Polytechnic University of Armenia and the Ministry, on which a memorandum of understanding was signed.

Currently, after the successful completion of the probation period, three trainees 2 female and one male have been hired by the Road Department.

6.2.8 Pilot of Performance-based Maintenance Contract (PBMC)

In the scope of this component of the Project, the Ministry had to develop and approve a pilot draft of a performance-based contract (PBC). As part of these actions, the WB team helped the line ministry to analyze the existing road maintenance procedures in the country, the legal and institutional framework, and presented proposals to improve the current procedures. The process was deliberative: RD has created a working group with the participation of partners of the line ministry. Then, as a result of the discussions between the MTAI and the RD, for the purpose of the pilot design of the "Performance Based Contract", a list of "Local Road Networks" was prepared, which was also brought to the attention of the WB team for further discussions. Unfortunately, later, due to technical issues, as a result of discussions between the MTAI and the RD, a decision was made to refrain from applying the technical assistance specified in the sub-component.

However, the RA Government's position is that WB's institutional proposals regarding performance-based multi-year contracts are essential and the further usage of them will be considered by the Government.

6.2.9 Road financing study

In 2013, within the framework of the LRNIP, it was planned to conduct a "Road financing study", which was launched in November 2014, and which ended in the summer of 2015. The main purpose of the study was to assess current road expenses incomes from taxes/fees paid by road users, estimate the necessary road expenses, and propose ways to meet these needs. As a result, the studies and recommendations reflected in the report were taken into account.

6.3 Applied monitoring and evaluation system

The project implementer used the model proposed by the World Bank, the application of which has been tested for many years and within the framework of similar projects. In particular, the implementing agency prepared semi-annual reports on the progress of the Project.

During the implementation of the project, due to social impact and monitoring studies conducted, the degree of achievement of some intermediate indicators was also measured. These reports were presented to the line ministry and the WB team.

6.4 Fiduciary functions

Throughout the project implementation period, fiduciary functions were delegated to the implementing agency, including financial planning and budgeting, accounting and financial accounting, cash flow management, internal financial control, financial reporting and auditing, procurement and contract management. All these processes were carried out in accordance with the guidelines of the World Bank, as a result of which high efficiency of fiduciary functions was ensured. There have always been two main divisions within the implementing agency performing fiduciary functions:

- the financial management and accounting department, which is responsible for financial planning, budgeting, financial flow management, financial reporting and
- the procurement division, which is responsible for planning, organizing and implementing purchases.

These two divisions are guided by an approved operational manual developed on the basis of the WB methodology. It has been tested by many projects and is effective. The effectiveness and relevance of fiduciary functions are also evidenced by the independent audit reports, which did not reveal any significant deviations from the procedures, as well as in the field of financial management. In addition, throughout the implementation of the project, there was close cooperation with the relevant WB employees: all issues were discussed and solved.

6.5 Assessing the Provision of Project Development Objectives (PDO)

The Two Primary Objectives of Project Development

1. To improve rural communities' access to markets and services through upgrading the selected lifeline roads,
2. To strengthen the capacity of the ministry in charge of roads to manage the lifeline road network.

Provision of the first objective was assessed by considering the following indicators:

Average driving speed on lifeline roads, km/h		
Designed	*Current state*	*Target indicator*
20	40	40

The indicator was fully achieved by the end of the project. This proves that all the necessary measures have been implemented within the framework of the project. However, in the future, it is also necessary to consider the specifics related to road safety (on good roads people drive faster, and often exceed the speed limits).

Share of the rural population with access to all-season roads		
Designed	*Current state*	*Target indicator*
51	77,56	76,8

Number of rural populations with access to all-season roads, person		
Designed	*Current state*	*Target indicator*
600,000	912,823	909,200

In general, all the evaluation indicators of the 1st objective are clearly exceeded, which indicates the high efficiency of the program. This achievement is also due to the high level of road improvement and technical control.

Provision of the second objective was assessed by considering the following indicators:

Users' perception on improvement of access to markets and services		
Designed	*Current state*	*Target indicator*
0	4,5[9]	4,5

Social monitoring and evaluation reports document that the share of households selling crops outside the target communities has increased after the improvement of roads. The share of the population selling crops inside and outside the community has also increased.

Development and use of RAMS, text		
Designed	*Current state*	*Target indicator*
Need for RAMS	7,500 km of road network data is collected and used	Use of RAMS

As already mentioned, the road asset management system includes data on interstate and national roads, which need periodic updating. From a perspective view, RAMS developed on the

[9] A survey was conducted to evaluate users' perception and a scale of 1 to 5 was used for measuring.

basis of HDM 4 can be used by integrating with the general electronic management system of the RA road network, which will enable automating the management of the entire road network and ensuring road safety through a number of tools.

As the above-specified indicators have reached their target index, and some even exceeded the set index, the provision of the Project's development objective can be assessed as **satisfactory**.

Project intermediate indicators are presented in the Annex 2.

6.8 Assessment of Compliance with Project Development Objectives (PDO)

The compliance of the Project is assessed as **satisfactory** taking into account a number of circumstances:

- throughout the implementation of the Project the PDO was consistent with to the primary goals of the sector defined by the RA government,
- throughout the entire implementation of the project, the PDO complied with all the activities carried out within the framework of the project,
- During the changes of the project, the PDO was not significantly changed.

7. Institutional, Financial and Socio-Economic Impact

All the Project indicators, as well as the interviews conducted indicate that both positive financial and economic results are in place and that project meets its objectives and its impact on the beneficiaries is present and visible. The project has a socio-economic orientation, which is mentioned in the project documents, and due to this circumstance, a comprehensive analysis of the socio-economic impact was carried out, which is presented in Section 7.3.

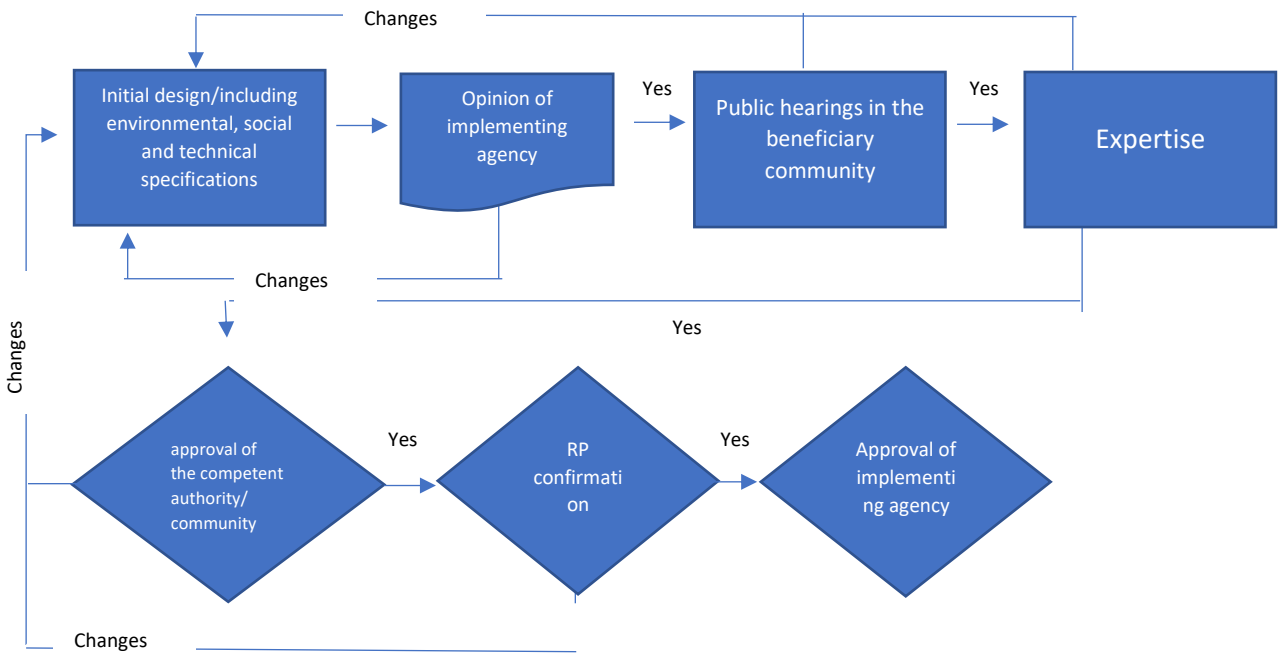
7.1 Institutional Impact

The Project on the whole had a systemic (institutional) effect, both on road construction and on the development of the implementing agency's institutional capacity. In particular:

- Clear criteria and economic calculations were applied for the selection of lifeline roads, using the HDM-4 tool, which started to be used for making decisions regarding the selection of roads to be repaired.
- As mentioned in the Report, the implementing agency undergone a number of systemic changes during the implementation of the project. However, due to ensuring the requirements set by the operational manual for the implementation of the Project, professional and knowledgeable specialists in the implementing agency continued working, who, regardless of changes, were responsible for the coordination and

implementation of the project's work. Moreover, even after the completion of the project, these specialists can move to other jobs in the same or related fields and, by applying their knowledge and skills obtained due to this project, will contribute to the quality improvement in this area and will transfer their knowledge.

- During the project, a separate approach to the coordination of works was applied, which assumed that each contract for the implementation of construction works and the provision of consulting services had an officially appointed coordinator who was a specialist of the team implementing the project. In addition to using a clear coordination model, this has also contributed to the professional development and establishment of team members. This model has also started to be used for the coordination of other road construction projects implemented at the expense of the RA state budget.
- The international consulting organizations that provided consulting services during the project also involved local companies and specialists, as a result of which they got to know and mastered the relevant international experience in production, engineering, management and other relevant fields.
- The quality of the design documents for road rehabilitation works developed during the project was rated high, as a systematic approach was used, ensuring also the participatory process, which is presented in the diagram below.



The project was one of the first in Armenia, within the framework of which technical specifications were included in the design package of construction works, which regulated the

organization and management of the construction site, the methods of implementation of the works, the acceptance procedure, issues of environmental protection and traffic safety, etc.

7.2 Financial Impact

Estimates of the net present value, internal rate of economic profitability, and sensitivity analyzes of the various stages of the project were carried out, which approves the cost-effectiveness of the project. To ensure that the works lead to sufficient economic benefits to warrant the investment, financial assessments were made using the Highway Development and Management Model (HDM-4). For example, a sensitivity analysis done in 2019 showed that the project was economically justified even if the construction cost was 20 percent higher or if the benefits of the project were 20 percent lower. During the assessment, data on the cost of rehabilitation of a similar road implemented at the expense of the state budget were collected and compared with the costs of the road rehabilitation implemented by the Project. As for the observed contracts, commonalities of values are observed. However, it should also be noted that at the same time there are significant differences in the average values of the roads improved at the expense of the state budget and with the funds of similar programs. Thus, in 2021, T-1-24, /M-3/ - Melikgyogh 1 km, implemented with the state budget. the value was 87 million. AMD, and Lukashin realized by the Project - H17, km0+000 - km3+150 1 km. the cost was AMD 86.55 million. Two other contracts were considered for the same period: within the framework of the T-1-39, /M-1/-Katnaghbyur-Shgharshik-Eghnik-/M-1/ contract implemented with the state budget, 1 km. the value was 82.7 million. AMD, while M1 - Inner Sasnashen - Metsadzor implemented under the Project, km0+000 - km9+130 1 km. the value was 96.45 million. AMD. Similar contracts were agreed for the years 2017-2019. Thus, through the state budget, 1 km of the road section /M-1/ (Gyumri) - Kaps - Amasia - /M-1/, km12+000 - km17+700. the average cost was 116.79 million. AMD, and Yeranos - Tsakkar improved by the Project, km0+000 - km7+253 1 km. the average cost was 98.7 million. AMD Comparisons were also made with respect to similar contracts of 2013-2014. 1 km of the road section H-184, M-3 - Norashen - Sarchapet (Norashen - Sarchapet section) improved with the funds of the state budget. the average cost was 127.14 million. AMD, while 1 km of the road section M-5 - New Kesaria - Shenavan - Getashen, km1+900 - km7+220 improved by the Project. the average cost was 118.45 million. AMD.

Indirect Financial Effects

The program also had an indirect but quite significant economic impact on the entire economy, particularly in the form of tax payments that entered the RA state budget. In particular, according to the decree of the RA Government No. 879-N of June 23, 2011, it is determined that the profitability of similar contracts should be calculated at 11%. That is, on average, about AMD 4.27 billion could be generated by the contractor organizations within the framework of the Project, of which AMD 854 million could be collected in the form of profit tax. Moreover, in the amount of 6% of the direct costs in such projects, the cost of labor is made up of about AMD 1.46 billion

during the whole project, of which payments in the form of personal income tax to the state budget can amount to 293 million AMD. The activities of the project also contributed to the activation of the economy in the beneficiary communities and marzes. It is wrong to claim that this is only the role of the Program, but it is obvious that the Program had its impact on the development of some fields. For example, during the interviews with the beneficiary communities, many opinions were voiced that after the improvement of the roads, tourism activities became more active. This is also evidenced by the official statistics presented in the table below.

Table 6: The number of hotels, by regions and by years[10]

Regions:	2013	2014	2015	2016	2017	2018	2019	2020	2021
Aragatsotn	5	5	5	5	4	5	7	7	9
Ararat	7	7	8	7	7	9	8	8	11
Armavir	2	2	4	5	3	4	15	16	19
Gegharkunik	2	5	5	8	9	11	39	40	44
Lori	10	10	17	21	15	19	30	30	33
Kotayk	35	43	41	54	57	65	91	93	103
Shirak	17	17	25	25	24	28	33	33	37
Syunik	28	34	32	36	35	37	38	38	46
Vayots Dzor	9	16	16	19	19	19	24	26	29
Tavush	38	41	47	67	63	65	74	76	82

In addition, the results of the Project had an impact on the development of the agricultural sector in the beneficiary communities and marzes. However, in this case, the influencing factors are much more (climatic conditions, seeds, general policy, etc.). However, this sector is also developing, and the positive impact of the Program is also seen. The table below shows the gross agricultural output by regions and years, and an obvious positive dynamic is observed.

Table 7: The gross agricultural output (at current prices, bln. AMD), by marzes and by years[11]

Marzes	2014	2015	2016	2017	2018	2019	2020	2021
Aragatsotn	98.8	100	87	88.4	91.3	79.7	82.5	87.2
Ararat	141.4	137.6	134.9	125	124.8	127.2	125	141.1
Armavir	173.7	179.3	176.5	184.2	177.5	178.7	181	211.1
Gegharkunik	178.2	135.4	111.6	122.6	118.2	112.4	99.4	113.8
Lori	73.8	75.1	69.2	79	73.2	68.5	67.2	78.6
Kotayk	59.8	61.5	60.4	73.4	72.9	70.6	73.7	78.6
Shirak	109	109.5	101.7	99.4	97.9	88.7	83.5	87.4
Syunik	70.2	68.9	64.6	62.1	63.4	58.9	54.4	59.5
Vayots Dzor	21.4	21.4	21.9	24	22.3	21.1	21.8	22.2
Tavush	45.4	46	39.6	39.9	39.3	37	35.9	45.6

[10]Source: RA Statistical Committee.
[11] Source: RA Statistical Committee.

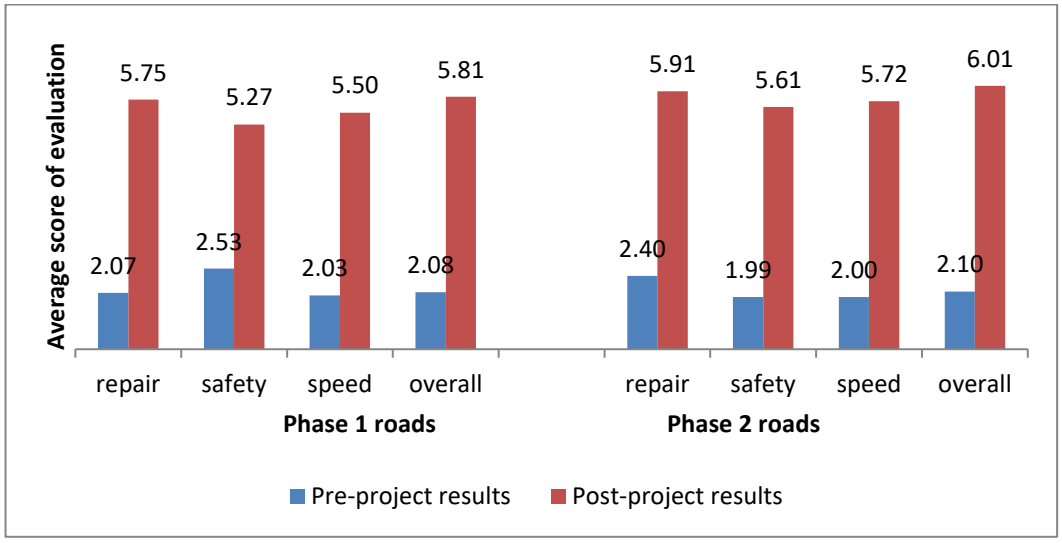
7.3 Socio-Economic Impact[12]

7.3.1 LRNIP[13]

During the monitoring[14], a special reference was made to the quality of the roads. The surveys are aimed at understanding the perception of the beneficiary communities about the quality of the roads in the pre-project and post-project stages.

According to the level of perceptions, significant positive dynamics are observed in almost all beneficiary communities with a number of indicators, which is presented in the diagram below.

Figure 2. Perception level of beneficiary communities on road conditions



It is clear that improvements have been recorded in all directions: reduced commuting time, significantly improved traffic safety. In addition, as a result of improving the quality of roads, the costs related to the maintenance of vehicles should also be reduced. In terms of Phase 1 roads, a certain increase in fuel and transport costs was recorded, which amounted to 25% in the post-project phase compared to the pre-project indicators. As for Phase 2 roads, this indicator has remained almost unchanged. This can be explained by the fact that the average transportation distances have increased. It is noteworthy that vehicle maintenance costs have been significantly reduced by more than 30%, which is a significant saving for the residents of rural communities.

Changes in the purpose of road use have also been recorded, and these records may indicate some economic activity as well. In the pre-project phase, men used roads for work, including agricultural activities, in 15% of cases, and women in 21% of cases. This indicator has changed in the post-project phase to 24% for men and 28% for women, indicating that the economic

[12] The list of roads is presented in Annex 7

[13] the data included in the social monitoring reports of LRNIP, LRNIP AF and LRNIP AF have certain differences in content and therefore the analyzes performed in this section may have certain differences in content.

[14] The analysis of this subchapter is based on data provided in the Post-project "Monitoring and Evaluation report" of LRNIP

activities related to the improvement of roads have been activated in the beneficiary communities.

The improvement of roads has also had a positive impact in a number of other areas, such as access to markets, access to health services, access to education, etc. The verification of these hypotheses is based on the expectations of the residents of the beneficiary communities recorded in the pre-project phase and the real results recorded in the post-project phase. For example, a number of problems were reported by the women of the Kornidzor community in phase 1, most of which were solved after the improvement of the roads.

Problems of the pre-project phase	Solution
Problems or inability to receive health care services	Fully resolved
Difficulties in selling agricultural products	Fully resolved
High vehicle maintenance costs	Fully resolved
High costs of transporting crops to neighboring communities	Unchanged

The issues/expectations raised by the Byurakan community were different, but a number of issues have been resolved in this community as well.

Problems of the pre-project phase	Solution
Limited opportunities to obtain secondary professional and higher education	Fully resolved
Waste of time	Fully resolved
High vehicle maintenance costs	Fully resolved
Low level of road safety	Partially resolved

A number of positive changes were also recorded in terms of road sections of phase 2. The expectations of the women of Torunik community in the pre-project stage and the evaluations of the results are considered below.

Problems of the pre-project phase	Solution
Access to health services	Fully resolved
Dangerous traffic	Fully resolved
High transport costs and loss of time	Fully resolved
Problems related to daily purchases, trading goods	Fully resolved
Impossibility of extracurricular education	Fully resolved
Inaccessibility to post-secondary education	Fully resolved
Difficulties in selling agricultural products	Fully resolved

The expectations of the youth of Yeraskhahun have also been solved after the improvement of the roads. Unlike women, the problems raised by young people are of a different nature, but

their solution is very important so that there is no migration of young people from the communities.

Problems of the pre-project phase	Solution
High cost of post-secondary education, limited opportunities	Fully resolved
Complications of transport communication with neighboring communities and Yerevan	Partially resolved
Waste of time	Fully resolved
High vehicle maintenance costs	Solved
Low level of cultural life	Partially resolved

7.3.2 LRNIP AF

According to Social monitoring and evaluation results[15] positive trends are observed in terms of households and from the different indicators point of view. In particular, road improvement had a positive effect on reducing total household expenditure, comparing pre- and post-project results. For example, in the 1st year, transportation costs decreased by 1% (from 6% to 5%), in the 2nd year, the costs remained the same at the level of 13%, in the 3rd year, the costs of vehicles were reduced by 2%. In the pre-program stage, these costs made up 12% of the total costs, and in the post-program stage, 10%. Positive dynamics are also observed in terms of other expenses for all 3 more years: food expenses decreased from 41% to 35% for the 1st year, from 42% (pre-program) to 38% for the 3rd year. (post-program), but by year 2, these costs increased from 29% pre-program to 36% post-program. In terms of the 2nd year of transport costs, a decreasing trend is observed, from 4% before the program to 2% in the post-program phase. In this context, the fact that the transport costs have increased between the 1st and 3rd year is significant, from 5% to 6% in the 1st year, and from 2% to 5% in the 3rd year. At first glance, this may be seen as a negative phenomenon, but it can be concluded that the improvement of roads has led to the invigoration of transportation and the increase in the number of cases of use of transport by the residents of the communities, which in turn indicates an improvement in the level of access to movement.

The improvement of the roads also had a positive effect on the access to the markets, as evidenced by the data and analyzes collected during the social monitoring. According to the recorded indicators, agriculture increased, as a source of income, in the case of the 1st and 3rd years. This indicates that the opportunities for selling agricultural products and earning income have been expanded.

[15] The analysis of this subchapter is based on data provided in the Post-project "Monitoring and Evaluation report" of LRNIP AF, Year 3

Table 8. Earnings of Beneficiary Communities by source of income %

Source of income	1st year		2nd year		3rd year	
	Pre-	Post-	Pre-	Post-	Pre-	Post-
Salary	55%	53%	68%	68%	40%	49%
Pension	48%	48%	46%	50%	46%	50%
Earnings from Agriculture	39%	46%	86%	86%	52%	57%
Social benefits	26%	25%	37%	37%	6%	6%
Private transfers	18%	16%	4%	4%	11%	5%
Own enterprise	13%	18%	74%	74%	2%	2%
Crafts	2%	2%	4%	2%	0%	2%
Rents	0%	0%	0%	0%	0%	0%

The positive effects of road improvement are also evidenced by the post-program indicators and dynamics of large expenditures made by households in the beneficiary communities. In particular, better infrastructure contributes to economic activities in related areas, including real estate markets and increased demand. In the targeted beneficiary communities, a significant increase in the average annual costs for the purchase of a house/apartment was observed in terms of the road sections of the 3rd year. The pre-program indicator was 500,000 AMD, and the post-program indicator reached 3,000,000 AMD, for the 2nd year, this indicator increased from 5,500,000 AMD to 12,000,000 AMD. Regarding the road sections of the 1st year, the costs of purchasing a car increased: pre-program: 635,000 AMD, post-program: 2,150,000 AMD. It is obvious that real estate prices are increasing as a result of improved road infrastructure, and this also indicates the positive effects of the Project.

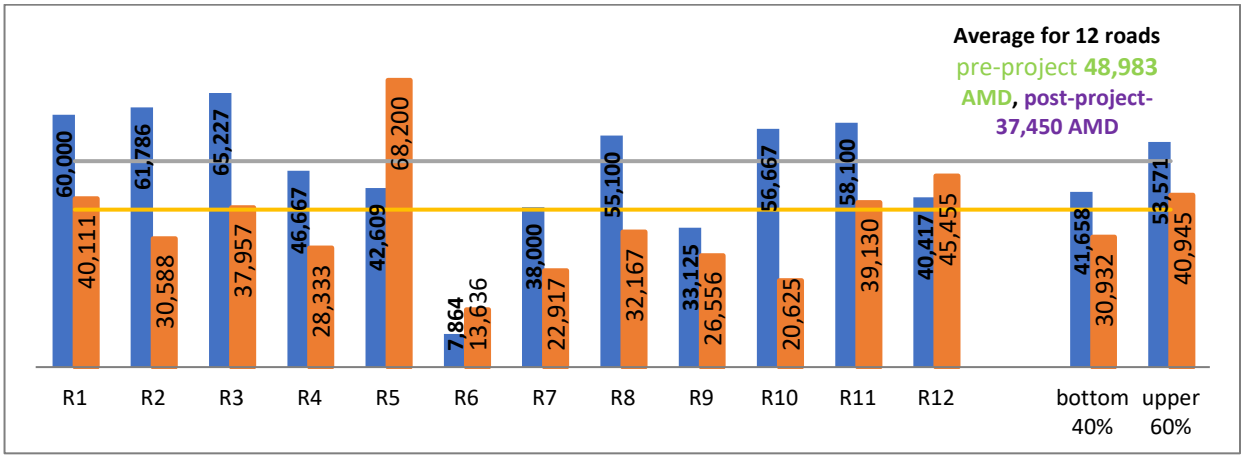
According to the results of the research, among the main problems identified by the beneficiary communities, the "problem of roads and transport infrastructure" has the highest share. In the pre-program phase, this indicator was 18% for the 1st year, 25% for the 2nd year, and reaching 40% for the 3rd year. For all three years, this indicator has improved in the post-program phases. In the 1st year, the indicator reached 12%, in the 2nd year - 19%, and in the 3rd year, this indicator decreased 10 times, reaching 4%. This is logically followed by the positive dynamics of the indicator of access to markets. It is obvious in case of the markets for the sale of crops. Thus, before the improvement of the roads, 52% of the harvest in the beneficiary communities was sold within the community for all years, and after the improvement of the roads, only 50% of the harvest was sold in the community, 30% of the harvest was sold outside the community, after the improvement, also 30%. the However, for example, only in the 3rd year, 51% of the harvest was sold inside the community, and after the improvement of the roads - 31%, 34% of the harvest was sold outside the community, after the improvement - 43%. After the improvement of roads, crop producers prefer to transport their crops themselves and sell them in markets outside the community (presumably at a higher price). According to the results of the pre-project survey, in 56% of cases, the buyer took the harvest from the community himself, and after the improvement, this indicator decreased to 41%. The opposite dynamic was recorded in cases

where the resident of the community transports his harvest to other markets. The pre-project rate was 35% of cases, and the post-project rate increased to 49%.

The project also had a certain positive effect on the increase in the number of cars in the beneficiary communities. It cannot be said that this is the result of a direct influence, but definitely the improvement of the quality of the roads plays a role in the decision to purchase a car. Thus, during the pre-project survey, the respondents owned 519 cars, and the post-project survey indicator increased by almost 4% - 540cars. Road quality also affects consumer behavior.

When exploring direct effects, special attention should be made at the level of vehicle operating costs, which has a significant impact on the amount of disposable income of households. In some of the beneficiary communities vehicle operating and maintenance costs were reduced, as shown in the chart below.

Figure 3. Operating and maintenance costs of vehicles in beneficiary communities by year, AMD



In general, there is a trend of decreasing expenses on vehicles, which varies by year. However, it should be noted that there are communities where these costs have been reduced by about 50%. On a monthly basis, these savings can reach up to 11,500 AMD on average, and 138,000 AMD annually. For households in rural communities, this is quite a significant amount that can be used to cover other expenses, which directly affects the level of well-being of households in the beneficiary communities. This effect becomes more prominent when we compare it with the average monthly expenditure per adult, which is AMD 44,720 for the beneficiary communities (post-program indicator). As a result of the savings mentioned above, households will be able to cover the expenses of one adult for almost 3.1 months on average.

It is also interesting to analyze the goals of community residents' trips, their structure and dynamics of change. It should be noted that according to the post-project results, visits for social and work purposes have increased compared to the pre-project survey, which can be said with certainty due to the improvement of the roads. The table below shows some averaged data for 12 communities, comparing pre-project and post-project indicators. It is clear that the improvement of roads has had some impact on economic activity, as evidenced by the increase in the shares of work and trips to markets. In addition, the improvement has also had the effect

of increasing the share of visits from relatives and friends. Well-maintained roads also contribute to the strengthening and intensification of friendly ties. Attendance to health care services have also been triggered. Facility visits, i.e. improvement of roads directly affected the increase in the level of access to health services.

Table 9. Visiting Directions by year and by period: Pre- and Post-, %

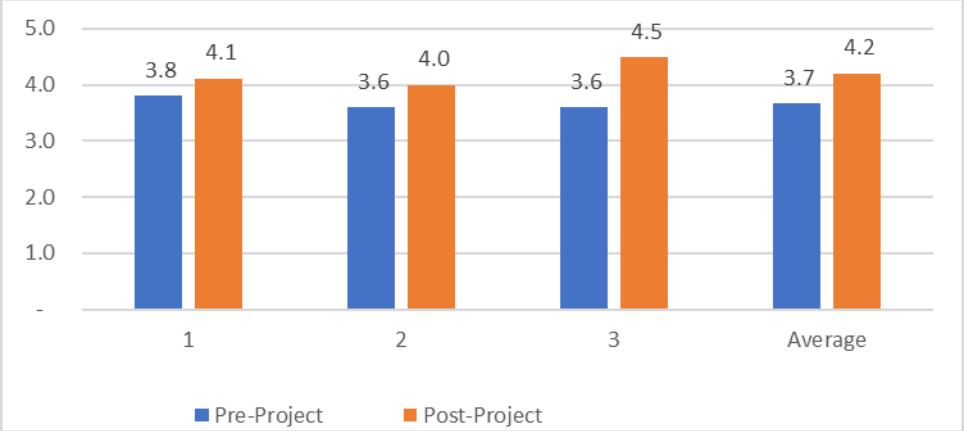
Visiting direction	1st year		2nd year		3rd year		Average:	
	Pre-	Post-	Pre-	Post-	Pre-	Post-	Pre-	Post-
Work:	**27%**	**28%**	**51%**	**42%**	**24%**	**28%**	**34%**	**33%**
market	**15%**	**15%**	**4%**	**10%**	**10%**	**18%**	**10%**	**14%**
Kindergarten	**2%**	**3%**	**2%**	**4%**	**4%**	**4%**	**3%**	**4%**
School:	**13%**	**22%**	**22%**	**18%**	**16%**	**16%**	**17%**	**19%**
Extracurricular classes and groups (language, sports, etc.)	**2%**	**1%**	**1%**	**0%**	**1%**	**1%**	**1%**	**1%**
University/Vocational Technical College	**4%**	**6%**	**4%**	**3%**	**2%**	**2%**	**3%**	**4%**
Visits of friends and acquaintances	**18%**	**11%**	**8%**	**11%**	**37%**	**43%**	**21%**	**22%**
Treatment: to receive services	**11%**	**9%**	**3%**	**2%**	**8%**	**13%**	**7%**	**8%**
Leisure/entertainment	**0%**	**0%**	**0%**	**0%**	**3%**	**2%**	**1%**	**1%**
Other:	**9%**	**6%**	**5%**	**10%**	**6%**	**6%**	**7%**	**7%**

The results of the social monitoring also indicate that in general the costs of the trip will also decrease and this in the case when the average distance of the trip has increased. Thus, the median cost of a trip by car on all roads was AMD 1,300 according to the results of the pre-project survey and AMD 2,100 according to the post-project survey. Considering that the average distance traveled by car increased by 71%, and the cost of the trip increased by 61%, we can record a decrease in costs per km by 6.1%.

The perception of the quality of public transport service among the residents of the beneficiary communities was also observed, and it should be noted that these perceptions had a positive trend in almost all communities. In the pre-project phase, the average perception index was 3.6, and in the post-project phase, this index was 4.5[16]. It is obvious that the Project has a direct impact on the quality of public transport service, the comfort of passenger transportation increases, and the time spent on the trip decreases.

[16] The rating is based on respondents' satisfaction level survey responses on a scale of 1-5, with 1 being "poor" and 5 being "excellent".

Figure 4. The perception of the quality of public transport service among the residents of the beneficiary communities



7.3.3 LRNIP AF2

According to Social monitoring and evaluation results[17] of LRNIP AF2, similar to LRNIP and LRNIP AF, positive trends are observed in terms of households and from the different indicators point of view.

In particular, road improvement had a positive effect on reducing total household expenditure, comparing pre- and post-project results. 1% reduction in vehicle costs for this phase of the project. In the pre-project stage, these costs made up 9% of the total costs, and in the post-project stage, 8%. This indicator is directly related to the improvement of roads, but at the same time we should note that the amount of change is not very big. Positive dynamics can be observed in other expenses as well, such as transportation expenses, which decreased from 7% to 6%. At the same time, there is an increase in some costs. Food expenditure increased by 5% from 36% (pre-project) to 41% (post-project). At first glance, this can be considered as a negative phenomenon, but on the other hand, this phenomenon can be considered from another point of view, in particular, having some savings, as well as additional income (temporary jobs), the residents of the community begin to spend more on food.

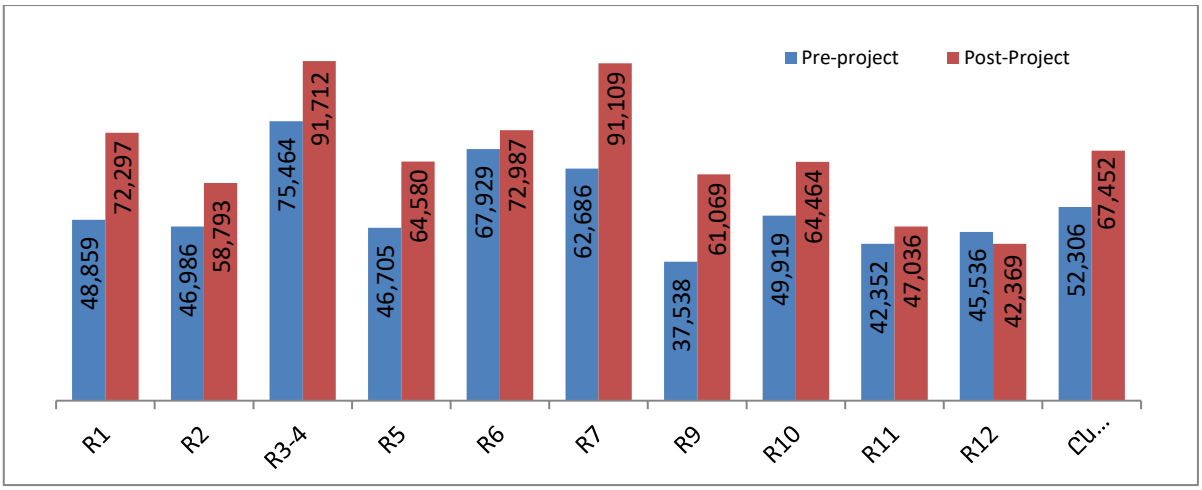
The project implementation has led to certain positive changes in the structure of employment in the beneficiary communities. According to the pre-project survey, 58% were involved in agriculture, and the post-project indicator decreased to 53%. Instead, employment increased by 2% in the field of construction, by 1.3% in the field of trade, and by 1.2% in the field of transport, communication and storage facilities. This indicates that the improvement of roads contributed to the development of other sectors in the target communities, as a result of which a change in the structure of employment was observed. It is noteworthy that in the beneficiary communities the employment increased by 1.4% in the education sector, which is a very good trend, and in

[17] The analysis of this subchapter is based on data provided in the Post-project "Monitoring and Evaluation report" of LRNIP AF2

the service sector (hotels, etc.) by 1.1%, proving the thesis that the improvement of roads contributes to the development of tourism.

In parallel with this, the average monthly expenditure per adult in the beneficiary communities has increased according to the results of the pre-program survey, it was AMD 52,306, and according to the results of the post-project survey, it was AMD 67,452 . The change was 22%. The change in this indicator also shows that the level of well-being of the beneficiary communities has improved, which is a consequence of the increase in income. In the context of all this, it can be said that the improvement of roads has led to an increase in income, which also leads to an increase in expenditure, and it is obvious that without an increase in income it is difficult to increase expenditure, especially in rural communities. And this dynamic is observed in almost all beneficiary communities, which is shown in the diagram below.

Figure 5. Average monthly consumer spending per capita (adult) by road segment (weighted data, pre- and post-project survey results)



According to the results of the social monitoring survey, the main problems identified by the beneficiary communities were related to roads and transport infrastructure (just an average of 12 beneficiary communities), and the indicator in the pre-project phase was 58%. In the post-project phase, this indicator has significantly decreased, reaching 38%. The improvement of roads also contributes to the revitalization of trade, as access to markets improves. Thus, the results of the post-project survey indicate that around 59% of rural households engaged in agricultural production sell their products. Compared to the pre-program survey, this figure has improved considerably (46% according to the pre-project survey).

This, along with those observations, speaks of improving access to markets. Thus, before the improvement of the roads, 43% of the harvest in the beneficiary communities was sold within the community, and after the improvement of the roads, 41% of the harvest was sold in the community, 34% of the harvest was sold outside the community, after the improvement - 39%. After the improvement of the roads, the activities of the purported hawkers in the target

communities also increased. In the pre-project phase, 47% of buyers transported the harvest from the community, and after the improvement, this indicator improved and reached 52%. Along with this, in the pre-project phase, in 34% of cases, the residents of the communities transported the crops to the markets by themselves, and in the post-project phase, this indicator decreased to 18%. For rural communities, this has a number of advantages: transportation costs related to crop transportation are reduced, time is saved, and wholesale trade is developing.

Similar to LRNIP AF, LRNIP AF2 also had a certain positive effect on the increase in the number of cars in the beneficiary communities. Thus, during the pre-program survey, the respondents owned 99 cars, and the post-project survey indicator increased by almost 12% to 111 cars. Road quality also affects consumer behavior. Along with this, the number of other types of vehicles has also increased, which is related to the activation of the agricultural sector. In particular, the number of tractors increased from 3 to 10, and the number of light trucks increased.

An increase in vehicle operating costs was observed in the target communities. The calculation of average monthly vehicle operating costs varies widely by road segment because the sample size is not large. However, the average monthly expenditure of road users has increased (AMD 42,469 according to the pre-project and AMD 52,775 according to the post-project survey). Although in-depth interviews noted that "car repair costs have decreased as a result of road repairs," there are other factors that explain the increase in average car operating costs. As mentioned, thanks to better roads, the average annual car usage has increased. Another factor that can cause the increase in average monthly expenses is inflation. In particular, in 2022 Comparison of consumer prices for September (post-project period) 2021. with the prices of January (project period) shows that the prices of accessories for the operation of personal vehicles in Armenia increased by 13%. Moreover, fuel prices have increased significantly during this period. The price of gasoline increased by 39.3%, the price of diesel fuel by 87.0%.[18]:
Improvement of road conditions also has a certain effect on the behavior of the residents of the communities, in particular, on the purposes of the trips and their structure. It should be noted that according to the post-project results, visits for social and work purposes have increased compared to the pre-program survey, which can be said with certainty due to the improvement of the roads. The table below shows some averaged data comparing pre-program and post-project indicators. It is clear that Project actions have had a certain impact on economic activities of beneficiary communities, as evidenced by the increase in the shares of work and trips to markets. Besides, the improvement also had an impact on increasing the share of visits from relatives and friends, contributing to the strengthening and intensification of friendly ties. Attendance to health care service have also been improved, i.e. improvement of roads directly affected the increase in the level of access to health services. The shares of visits to educational

[18]Calculated on the basis of CPI publications of the Statistical Committee.

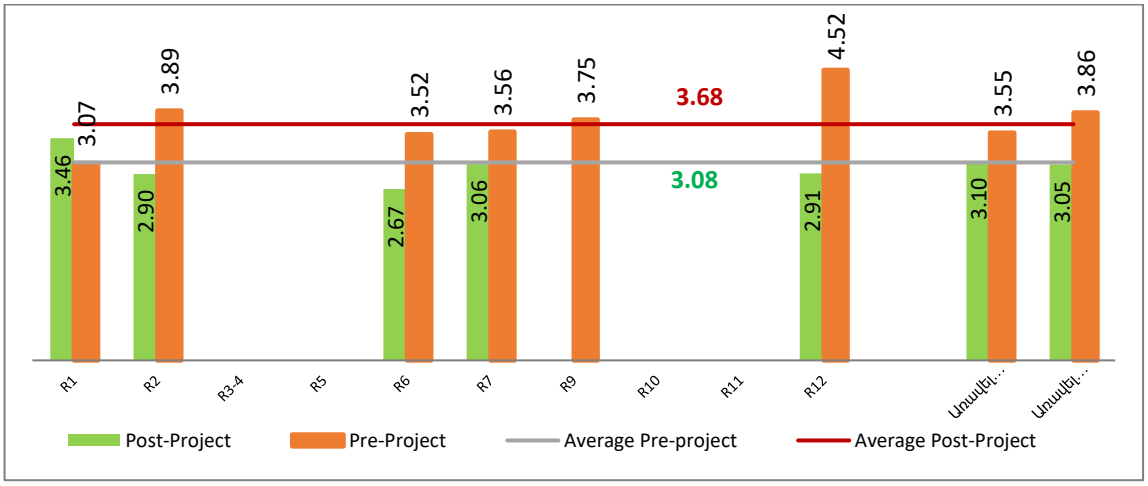
institutions have increased, which is also a very good dynamic, which indicates that access to education is also improving.

Table 10. Visiting directions by stages of survey %

Pre-project	Total	Post-project	Total
Work	**23%**	Work	**25%**
Market	**16%**	Market	**19%**
Kindergarten	**2%**	Kindergarten	**6%**
School:	**20%**	School:	**22%**
Extracurricular classes and groups (language, sports, etc.)	**1%**	Extracurricular classes and groups (language, sports, etc.)	**1%**
University/Vocational Technical College	**2%**	university/ vocational technical school	**3%**
Visits of friends and acquaintances	**33%**	Visits of friends and acquaintances	**37%**
Health care services	**10%**	Healthcare services	**11%**
Leisure/entertainment	**1%**	Leisure/entertainment	**1%**
Other:	**8%**	Other:	**19%**

The average cost of one trip by car on all roads was ~AMD 1,800 (median: AMD 600) according to the results of the pre-project survey and ~AMD 2,000 (median: AMD 800) according to the post-project survey.

Figure 6. The perception of the quality of public transport service among the residents of the beneficiary communities



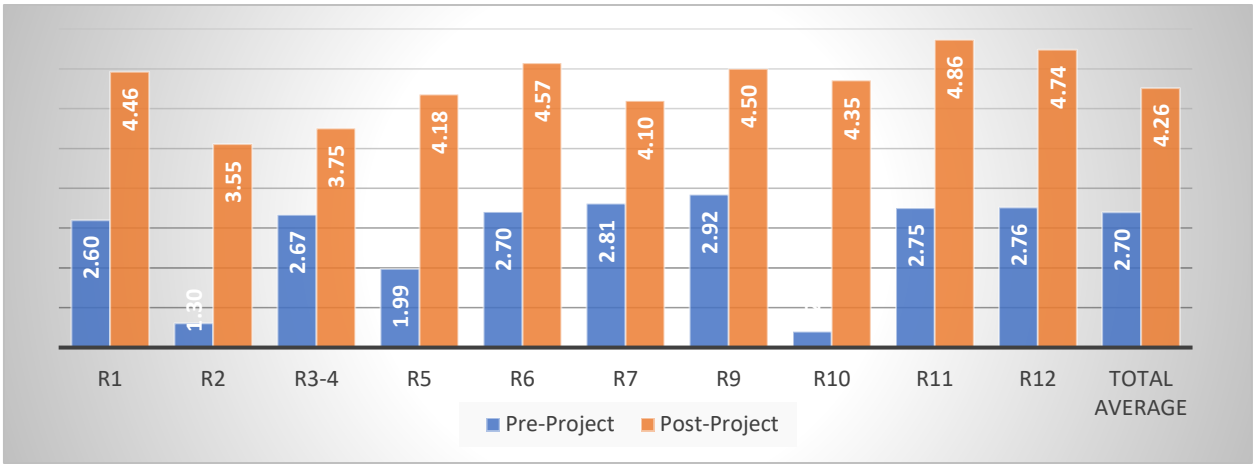
The perception of the quality of public transport service among the residents of the beneficiary communities was also observed, and it should be noted that these perceptions had a positive trend in almost all communities. In the pre-program phase, the average perception index was 3.08, and in the post-project phase, this index was 3.68.[19].

[19]The rating is based on respondents' satisfaction level survey responses on a scale of 1-5, with 1 being "poor" and 5 being "excellent".

After the improvement of the roads under LRNIP AF2, the overall assessment of the condition of the roads by the population living in the settlements adjacent to the considered road sections has increased significantly. The post-project results showed a great increase in the condition of all roads. In particular, if the current condition (quality) of the roads was rated 2.10 points out of 5 in the pre-project stage, the road condition in the post-project stage was rated 4.0 points (80% of the maximum possible rating). The average indicator of satisfaction with road signs was 4.1 points, while the indicator indicated by the results of the pre-project survey was 2.06 points. The safety of regional/national roads was rated 4.20 points on average), and previously it was 3.10 points.

The expectations of the population from road maintenance have also been justified and the satisfaction index has increased significantly after the improvement works. According to the results of the pre-project survey, the level of satisfaction was estimated at an average of 2.70, and according to the results of the post-project survey, it reached 4.26 points.

Figure 7. Perception of residents of beneficiary community on road maintenance quality



During the research, a number of qualitative indicators were collected, which are presented below in a grouped form:

- Traffic has become easier.
- The road has been shortened (drivers are not looking for longer but good alternative roads),
- Safe and trouble-free operation of machines,
- Reduction of transport costs and time,
- Good condition of the roads (lack of dust, puddles),
- Reducing vehicle repair costs.

7.4 Other Impact

Based on document review and in-depth interviews, some of the major improvements achieved as a result of the project implementation, also are as follows:

During the road construction, the local population was provided with temporary work

Thanks to the implementation of the project, the population of the communities had an opportunity to get involved in the activities carried out in their community, aimed at ensuring the economic multiplier effect in the communities, which was assumed by the logic of the project. As a result, an average of 103 temporary jobs per month were created in the communities, through which an additional income of AMD 150,000 was provided to each unemployed person. See Appendix 7 for details.

As a result of increased access to roads inbound tourism in rural areas developed

As a result of the implementation of the project, along with the improvement of the roads, inbound tourism has been revived in a number of beneficiary communities. During the in-depth interviews with community representatives, it was documented that the community has started to host a larger number of tourists.

Decrease in the number of students emigrating from rural areas

Students, who used to leave their communities and move to regional centers or cities to study, with the roads improved, choose to stay in their communities. This was confirmed during in-depth interviews with representatives of the beneficiary communities. It must be noted that this achievement has several dimensions:

- Demographic. When a young person leaves the community to study, there is a high risk that the he/she will find work in the city and will not return to the community, contributing to a worsening demographic situation. Thanks to the activities of the project, young people started not to left their community, and in this case the probability that they will continue living in their community is higher.
- Financial. In other cities, students mostly rent apartments, which is an additional financial burden for the family. In this case, the families are no longer paying for this additional financial expenses.

It was expected that the Program was also aimed at contributing to the reduction of emigration and demographic growth in the marzes. Clearly, good infrastructure is a contributing factor, but to claim that infrastructure alone is responsible for reducing emigration is a mistake, as there are many other factors. The figures on number of population is provided in the below table.

Number of population by marzes and years

Marz	2013	2014	2015	2016	2017	2018	2019	2020	2021
Aragatsotn	133.0	132.3	131.3	129.8	128.5	127.1	125.4	124.7	**124.5**
Ararat	261.4	260.8	260.1	258.9	258.4	257.8	256.7	256.6	**256.6**
Armavir	267.1	267.2	267.0	266.6	265.8	264.6	263.9	263.8	**264.0**
Gegharkunik	235.6	234.1	233.0	231.8	230.7	229.7	228.3	227.7	**227.3**
Lori	234.7	230.8	228.0	225.0	221.1	217.4	215.5	213.3	**212.6**
Kotayk	255.3	255.0	255.0	253.9	252.8	251.6	251.6	250.9	**251.2**
Shirak	251.3	248.3	246.4	243.2	239.3	235.4	233.3	231.4	**231.0**
Syunik	141.7	141.0	140.2	139.4	138.9	138.4	137.6	137.3	**135.8**
Vayots Dzor	52.2	51.7	51.4	50.8	50.3	49.6	49.0	48.5	**48.1**
Tavush	**128.3**	**127.6**	**126.7**	**125.5**	**124.5**	**123.5**	**122.2**	**121.5**	**120.5**

8. Project Sustainability Risk Assessment

Referring to the sustainability of project results, it is necessary to distinguish the following factors that can affect project sustainability:

- As a result of the implementation of the project, a number of advisory documents were developed and submitted to the Government. The authorized body have the opportunity to consistently use those documents in its future activities.
- During the implementation of the project, a number of procedures were developed, tested and applied, which are very effective and may be applied in other similar projects.
- The rehabilitated sections of the road are handed over to the beneficiary community, which takes responsibility for the maintenance of this sections of the road. A new and well-built road in terms of its maintenance requires less financial resources for upcoming years.
- Technical means and software (intensity counters, profilers, HDM-4, etc.) acquired for the purpose of inventory and management of roads can have a positive impact on project sustainability

Taking into account achievements and current level of usability, at this point the the risk of sustainability of project results is assessed as **satisfactory.**

9. World Bank and Borrower Performance Evaluation

9.1 World Bank Performance

Cooperation with the WB has been effective, which is evidenced by a number of circumstances.

- Open and transparent discussions were held with the line ministry and the implementing agency during the project, its amendments, and designing of loan agreements. The Bank took into account the real needs and priorities of the state, which were reflected in the project documents.
- The WB has always provided the necessary assistance and advice at all stages of the implementation of the project, both to the line ministry and the implementing agency.
- During the changes of the implementing agency, through consultations the WB proposed such settings, application of which resulted in minimisation of possible negative effects.
- The WB has continuously contributed to the capacity development of key project structures via relevant trainings and consultations.
- All questions addressed to the WB were answered and explanations were provided. The bank approvals were timely, without delays.

Considering the abovementioned, the activity of the World Bank was assessed as **highly satisfactory.**

9.2 Borrower Performance

9.2.1 Evaluating Government Performance

Since the project design works, the RA Government, represented through the line ministry, has been actively involved in the design and implementation works. During the implementation of the project, WB missions also evaluated the cooperation with the RA Government and line ministries as efficient. As mentioned in the Report, during the implementation of the project, the line ministry underwent a number of structural changes, but as a result of the policies adopted by the RA Government and the line ministry, those changes had almost no impact on the implementation of the Project. The progress of the project was constantly monitored by the line ministry, the interventions were in place and on time.

In addition, the line ministry effectively cooperated with the WB's team, adopting a partnership, open and transparent working method, which had a positive effect on the achievement of project results.

Given the support of the RA Government to the implementation of the Project and the efficient cooperation, its performance is assessed as **highly satisfactory.**

9.2.2 Performance Evaluation of the Implementing Agency

The performance of the implementing agency is assessed as **highly satisfactory**, taking into account a number of circumstances:

- Starting from the Project design, the implementing agency has actively participated in the project implementation and has taken full responsibility.
- A number of structural changes took place in the implementing agency body, the negative impact of which was mitigated as much as possible:
  - Key employees have not been fired,
  - The implementing agency has kept the institutional memory,
  - Parallel to the structural changes, the work of the project was not stopped,
  - Partnership relations with the line ministry and the WB's team have been maintained.
- The implementing agency followed all the procedures stipulated by the loan agreements, as well as the requirements of the relevant national legal acts.
- During the implementation of the project, the implementing agency effectively cooperated with contractors, consultants, intervened, if necessary, to solve problems, predicted and prevented possible risks.
- Carried out consistent work with beneficiary communities, which resulted in a high level of participation and ensured the effective cooperation.

10. Lessons Learned and Recommendations

During the development of the report, a number of "lessons learned" were brought out, recommendations were developed, which are aimed at making the implementation of a similar projects even more efficient.

Lessons Learnt	Recommendations
Maintenance and protection of well-maintained roads is the responsibility of the RA marz administrations and local self-governance bodies. This implies that the community should clearly represent and plan maintenance and conservation work, as well as allocate sufficient funds for this. This does not always mean that companies have to do all the maintenance work. This is due to two main reasons: - Lack of clear planning,	It is necessary to ensure precise short and mid-term planning of roads maintenance works. To budget sufficient financial resources for roads' maintenance works in communities Medium-Term Expenditure Frameworks. Consider and start implementing a performance-based contracting model.

- Limited financial resources.	
During the Project implementation, the perspective of territorial proportional development in the context of modernization of local road infrastructures was not taken into account in some extend.	When designing road construction projects, take into account the context of territorial proportional development, which can be defined as one of the criteria for selecting a group of roads. In other words, consider the perspectives of simultaneous development of local road networks. Implement relevant legal changes and start applying the performance-based contract method. If possible, implement several pilot programs, clearly understand the possible problems, correct them and start actively applying the mentioned method.
The warranty period for maintenance of reconstructed roads is quite short within the framework of the project.	It is recommended to set a minimum term of at least 3 years for the defect liability period of roads reconstructed within the framework of similar projects, as is the case with projects financed by the State budget.
During the implementation of the similar projecta, there may be structural changes in the line ministry and/or implementing agency, which may have a negative impact on the implementation of the projects.	In this sense, in the case of similar projects, it is proposed to apply good experience gained during the Project: - To inform the donor organization about structural changes as soon as possible - To ensure continuous activities of the key units of implementing agency, in particular: project managers, engineering and control teams, specialists performing fiduciary functions, procurement specialists.
The project's "Road safety education and public awareness campaigns" involved mostly children and women, while in most cases men drive cars in communities. In addition, the participants of the campaign emphasized that any community in Armenia	In order to implement awareness campaigns, expand the range of beneficiaries: actively involve drivers and residents of adjacent communities.

should have an equal opportunity to be included in the campaign.	
Difficulties in decision-making caused by the lack of unified, detailed and complete data on dangerous road sections.	UNDP is working on the development of an analytical tool on road accidents. To ensure access to the mentioned analytical tool for RD via continuous work with the UNDP.

Appendix 1 – Project Expenditure and Funding

Table 11. Project Funding, USD

	LRNIP	LRNIP AF	LRNIP AF2	Total
Credit funds, USD	45,000,000	40,000,000	15,000,000	100,000,000
Co-financing by the government, USD	11,221,875	9,980,000	3,752,000	24,953,875
Total	56,221,875	49,980,000	18,752,000	124,953,875

It should be noted that although as a result of the implementation of the project, the improvement of infrastructures ensuring road safety was recorded in all corridors, when studying the average costs of 1 km of road rehabilitation by year, no clear pattern was revealed.

Figure 8. The average cost of 1 km of road rehabilitation by years, AMD

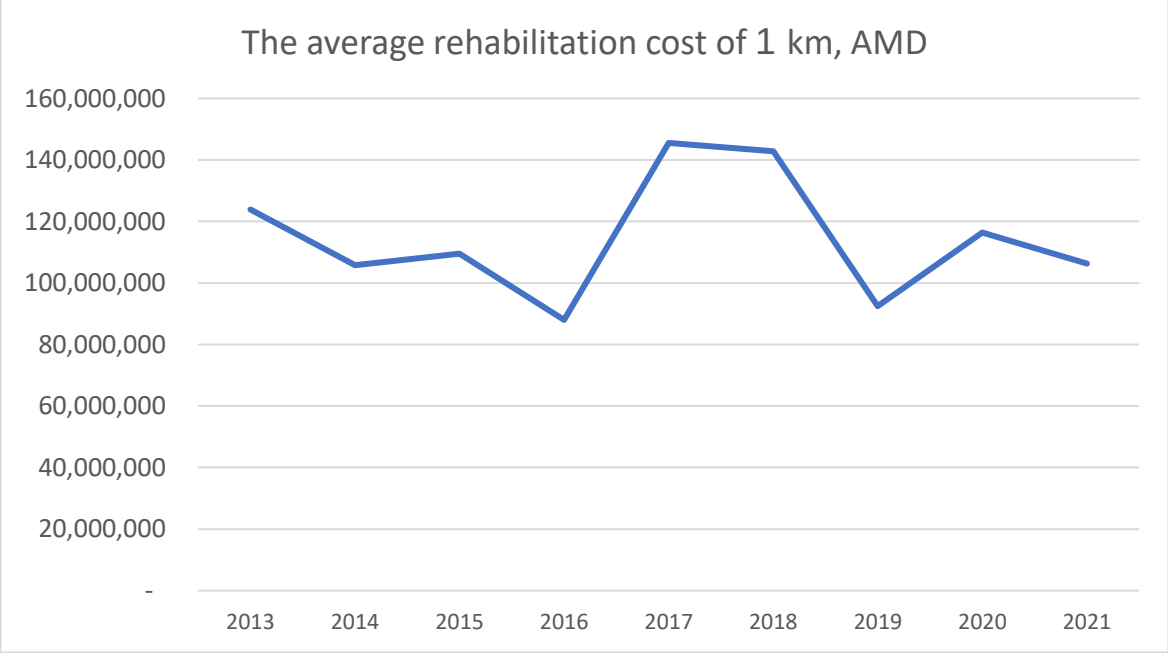


Table 12. Loan Disbursements, USD

	Designed	Disbursed	Not Disbursed	Disbursement share, %
LRNIP	45,000,000	43,751,780	1,248,220	97%
LRNIP AF	40,000,000	40,000,000	0	100%
LRNIP AF2	15,000,000	15,000,000	0	100%
TOTAL	**100,000,000**	**98,751,780**	**1,248,220**	99%

Appendix 2 – Project intermediate indicators

Component 1. Lifeline Road Improvement

Result 1. Roads rehabilitated, Rural (Kilometers)		
Designed	*Current state*	*Target indicator*
0	453	450
Result 2. Black spot improvement program designed and implemented (Yes/No)		
No	Yes	Yes

Component 2 - Project Management and Institutional Strengthening

Result 1. Number of km of lifeline roads fed into RAMS (Kilometers)		
Designed	*Current state*	*Target indicator*
0	7,500	7,500
Result 2. Number of "Safe Village" projects completed (Number)		
0	114	100
Result 3. PBC pilot designed and endorsed by the line ministry (Yes/No)		
No	No[20]	No
Result 4. Road Financing Study completed and endorsed by GoA (Yes/No)		
No	Yes	Yes
Result 5. Roads in good and fair condition as a share of total classified roads (Percentage)		
50	61,33	59
Result 6. Percentage of project related grievances addressed by the line ministry (Percentage)		
0	100	100
Result 7. Pilot on rehabilitation and maintenance contract designed, implemented, and evaluated (Text)		

[20] PBC pilot was not implemented because for the introduction of multi-year contracts it required structural changes in the budget.

Need to test the Concept	Concept tested and decision taken	Concept tested and decision taken
Result 8. Development and use of crash data collection and management system (Yes/No)		
No	No[21]	Yes
Result 9. Size of the total classified network (Kilometers)		
4,000	4,000	4,000
Result 10. Female graduates recruited in a paid six-month internship program in the implementing agency in the area of engineering, design, road safety and/or related fields (Number)		
0	9	8

[21] The project supported the review of the existing crash data collection and management system in Armenia and proposed appropriate improvements. The police have agreed to implement the proposed improvements following the completion of ongoing police reforms.

Appendix 3 – A list of work implemented during the project

CONSTRUCTION WORKS

No	No	Name of the road section	Marz	Length, km	Beneficiary community	Contractor	Number of Contract	Contract price, AMD	End date	Notes
1. LRNIP, 2013										
1	**1**	U1 - Agarak - Byurakan - Antarut, km0+000 - km8+650	Aragatsotn	8.7	3	«Ararat-Chanshin» LLC	CW-ICB-LRNIP-2013/1, lot 1	1,063,433,013	10.12.2013	
2	**2**	U7 - Arevashogh, km0+000 - km2+465	Lori	2.5	1	«Argishti-1» LLC	CW-ICB-LRNIP-2013/1, lot 3	368,924,535	29.11.2013	
3	**3**	M12 - Kornidzor, km0+000 - km5+272	Syunik	5.3	1	"Zangezurtransshin" OJSC and "Kamurjshin" CJSC	CW-ICB-LRNIP-2013/2, lot 2	691,674,275	05.12.2013	
4	**4**	Mayakovsky – Nor Gyugh - Kotayk - Kaputan - Zovashen, km0+000 - km4+410 and km6+710 - km19+700	Kotayk	17.4	5	“Khachhar” LLC	CW-ICB-LRNIP-2013/3	1,644,136,756	22.05.2013	
1. Total LRNIP, 2013				**33.85**	**10**			**3,768,168,579**		
2. LRNIP, 2014										
5	**1**	M-5 - New Caesarea - Shenavan - Getashen, km1+900 - km7+220	Armavir	5.3	3	"Sisian BUAT" LLC	CW-ICB-LRNIP-2013/1, lot 2	627,792,289	20.06.2014	2013-2014
6	**2**	U10 – Nerqin Getashen – Verin Getashen - Madina, km0+000 - km10+700	Gegharkunik	10.7	3	"Kapovor" LLC	CW-ICB-LRNIP-2013/2, lot 1	1,084,481,024	30.10.2014	2013-2014

No	No	Name of the road section	Marz	Length, km	Beneficiary community	Contractor	Number of Contract	Contract price, AMD	End date	Notes
7	3	Մ9 - Arteni - Aragats - Getap, km25+940 - km49+290	Aragatsotn	23.4	3	“Khachhar” LLC and “Kapavor” LLC	CW-ICB-LRNIP-2013/4	2,240,631,258	30.10.2014	2013-2014
		Մ9 - Arteni - Aragats - Getap,, km25+940 - km49+290 (summer and winter maintenance)						45,340,323	31.12.2016	30.10.2014 31.12.2016
2.Total LRNIP, 2014				**39.40**	**9**			**3,998,244,894**		
3. LRNIP, 2015										
8	**1**	H5 - Argel - Karenis - Charentsavan, km0+000 - km5+346	Kotayk	5.3	3	“AAB Project” LLC	CW-NCB-LRNIP-2015/1	603,495,112	12/8/2015	
9	**2**	Agarak - Yaghdan - Koghes - Mghart - Arevathag - Karmir Aghek - Tsater - Aygehat - Ardvi - Odzun - M6, km21+900 - km28+240	Lori	6.3		“Argishti-1” LLC	CW-NCB-LRNIP-2015/2, lot 2	835,936,865	12/2/2015	
10	**3**	Ashtarak - Oshakan - Dasht - M3, km0+000 - km8+796	Aragatsotn	8.8	4	“Kotayk CHSHSH” LLC	CW-NCB-LRNIP-2015/4	855,503,446	12/10/2015	
11	**4**	Abovyan - Nor Geghi - Yeghvard - M1, km0+000 - km12+000	Kotayk	12.0	5	“Kapavor” LLC	CW-NCB-LRNIP-2015/5	1,152,395,736	10/27/2015	
12	**5**	Lot 1: M2 - Shaki - Sisian - Tolors - Bunnis - Torunik - Datakert: km0+000 - km6+000 and entrance to Shaki: km0+000 - km 0+600 Lot 2. M2 - Shaki - Sisian - Tolors -	Syunik	10.0	2	"Sisian BUAT" LLC	CW-NCB-LRNIP-2015/8,lot 1 and lot 2	1,447,939,105	12/15/2015	

No	No	Name of the road section	Marz	Length, km	Beneficiary community	Contractor	Number of Contract	Contract price, AMD	End date	Notes
		Bnunis - Torunik - Dastakert, km6+000 - km9+340								
13	**6**	Lot 1: M2 - Shaki - Sisian - Tolors - Bunnis - Torunik - Datakert: km9+340 - km17+500 and entrance to Bunnis: km0+000 - km1+726 Lot 2: M2 - Shaki - Sisian - Tolors - Bununis - Torunik - Datakert: km17+500 - km26+248 and entrance to Torunik: km0+000 - km0+460	Syunik	19.1	4	"Zangezurtransshin" OJSC and "Kamurjshin" CJSC	CW-NCB-LRNIP-2015/9, lot 1 and lot 2	1,285,026,603	12/15/2015	
14	**7**	Armavir - Norapat - Mrgashat - Arevik - Yeghegnut - Yeraskhahun, km7+800 - km18+795	Armavir	11.0	3	“Kapavor” LLC	CW-NCB-LRNIP-2015/11	1,002,942,242	27.11.2015	
15	**8**	Improvement of accident collection points	Different marzes			“Khachhar” LLC	CW-NCB-LRNIP - 2015/12-RS	103,425,450	12/17/2015	
16	**9**	H17 - Karakert: km0+000 - km3+700, Dashtadem - H75: km13+300 - km18+972 and Dashtadem - H75: km7+706 - km13+300	Aragatsotn	15.0	6	“Khachhar” LLC “Ararat-Chanshin” LLC and “Talin ATCH”CJSC	CW-NCB-LRNIP - 2015/13	1,531,406,857	12/17/2015	
17	**10**	M4 - Sevan - M4: km0+000 - km1+044 and Sevan - Varser: 0+000 - km3+577	Gegharkunik	3.8	2	“Shant-Seyran” LLC	CW-NCB-LRNIP - 2015/14	585,663,457	12/7/2015	

No	No	Name of the road section	Marz	Length, km	Beneficiary community	Contractor	Number of Contract	Contract price, AMD	End date	Notes
18	**11**	T-2-25 – Sloping – T-2-27, km0+000 – km2+831	Ararat	2.8	1	"Zangezurtransshin" OJSC	CW-NCB-LRNIP - 2015/15	286,244,372	12/17/2015	
3. Total LRNIP, 2015				**94.06**	**30**			**9,689,979,245**		
4. LRNIP, 2016										
19	**1**	Agarak - Yaghdan - Koghes - Mghart - Arevatsag - Karmir Aghek - Tsater - Aygehat - Ardvi - Odzun - M6, km15+706 - km21+900	Lori	6.2	13	“Chanaparh” LLC	CW-NCB-LRNIP-2015/2, lot 1	434,847,209	8/8/2016	2015-2016
20	**2**	Agarak - Yaghdan - Koghes - Mghart - Arevatsag - Karmir Aghek - Tsater - Aygehat - Ardvi - Odzun - M6, km 0+000 - km15+706	Lori	15.7		“Khachhar” LLC	CW-NCB-LRNIP-2015/3	1,414,360,538	8/9/2016	2015-2016
21	**3**	Agarak - Yaghdan - Koghes - Mghart - Arevatsag - Karmir Aghek - Tsater - Aygehat - Ardvi - Odzun - M6, entrance to Ardvi, km0+000 - km2+571 and entrance to Mghart, km0+000 - km0+907	Lori	3.5		“Chanaparh” LLC	CW-NCB-LRNIP-2015/6	256,194,462	8/8/2016	2015-2016
22	**4**	Agarak - Yaghdan - Koghes - Mghart - Arevatsag - Karmir Aghek - Tsater - Aygehat - Ardvi - Odzun - M6, entrance to Sunrise - Tsater, km0+000 -	Lori	7.8		“Chanaparh” LLC	CW-NCB-LRNIP-2015/7	532,030,232	8/8/2016	2015-2016

No	No	Name of the road section	Marz	Length, km	Beneficiary community	Contractor	Number of Contract	Contract price, AMD	End date	Notes
		km3+877 and entrance to Arevatsag - Karmir Aghek, km0+000 - km3+973								
23	**5**	Armavir - Norapat - Mrgashat - Arevik - Yeghegnut - Yeraskhahun, km0+000 - km7+800	Armavir	7.8	3	"Kuarlin" LLC, "Sisian BUAT" LLC, "Road cars" CJSC	CW-NCB-LRNIP-2015/10	1,079,816,175	01.08.2016	2015-2016
4. Total LRNIP, 2016				**41.00**	**16**			**3,717,248,616**		
5. LRNIP, 2017										
24	**1**	Rehabilitation of the road section of Janfida community	Armavir	3.1	1	"Kuarlin" LLC	CW-NCB-LRNIP-AF-2016/4	401,542,083	27.09.2017	2016-2017
5. Total LRNIP, 2017				**3.10**	**1**			**401,542,083**		
6. LRNIP AF Y1, 2017										
25	**1**	H-1 - Hrazdan - H-55, km0+000 - km3+290 (km0+000 - km0+627)	Kotayk	3.9	1	"Ter-Hayrapetyanshin" LLC and "AAB Project" LLC	CW-NCB-LRNIP-AF-2016/1	904,474,633	11.07.2017	2016-2017
26	**2**	Martuni - Vaghashen - Vardenik, km0+000 - km10+500	Gegharkunik	10.5	5	"Kapavor" LLC	CW-NCB-LRNIP-AF-2016/2	2,012,725,003	04.10.2017	2016-2017
27	**3**	M-11, Martuni - Vardenis - NKR border, km6+500 - km10+834	Gegharkunik	4.8	2	"Shant-Seyran" LLC and "Kapavor" LLC	CW-NCB-LRNIP-AF-2016/3	690,407,280	16.10.2017	2016-2017
28	**4**	M-2 - Sisian, km0+000 - km5+872	Syunik	6.58	1	"Sisian BUAT" LLC	CW-NCB-LRNIP-AF-2016/5	881,018,949	14.07.2017	2016-2017
29	**5**	Yeranos - Tsakkar, km0+000 - km7+253	Gegharkunik	5.97	4	"Gavar CHSHSH" OJSC and "Khachhar" LLC	CW-NCB-LRNIP-AF-2016/6	589,246,231	05.11.2017	2016-2017

No	No	Name of the road section	Marz	Length, km	Beneficiary community	Contractor	Number of Contract	Contract price, AMD	End date	Notes
30	**6**	Maralik - Karaberd - Dzithankov, km0+000 - km11+100	Shirak	12.1	3	"Merdzmoskovyan" OJSC and "Saudi"	CW-NCB-LRNIP-AF-2016/7	1,492,193,695	16.08.2017	2016-2017
		Maralik - Karaberd - Dzithankov, *km0+000 - km11+100 (summer and winter maintenance)*						*11,177,992*	*16.11.2019*	*15.11.2017 - 16.11.2019*
31	**7**	H-6 - Nor Geghi - Argel - Arzakan - Hrazdan: km10+000 - km25+232 and down to Qaghsi: km0+000 - km1+570	Kotayk	18	5	"AAB Project" LLC "Kotayk CHSHSH" LLC and "Saudi" SC	CW-NCB-LRNIP-AF-2016/8	1,983,720,561	30.11.2017	2016-2017
		H-6 - Nor Geghi - Argel - Arzakan - Hrazdan: km10+000 - km25+232 and down to Qaghsi: km0+000 - km1+570 *(summer and winter maintenance)*						*6,160,165*	30.11.2019	*01.12.2017 - 30.11.2019*
6. Total LRNIP AF Y1, 2017				**61.85**	**21**			**8,571,124,509**		
7. LRNIP AF Y2, 2018										
32	**1**	Arevshat - Abovyan, km0+000 - km1+543	Ararat	1.54	2	"Ararat-Chanshin" LLC	CW-NCB-LRNIP-AF-2017/1, lot 1	361,218,059	23.10.2018	
33	**2**	T-2-20 - Ditak - Jrashen, km0+000 - km2+116		2.12	2	"Kapavor" LLC	CW-NCB-LRNIP-AF-2017/1, lot 2	370,564,140	23.10.2018	
34	**3**	H8 - T-2-16 M2 - Hovtashen - H12, km0+000 - km2+120		2.12	1	"Mostovik" LLC and "Merdzmoskovyan" OJSC	CW-NCB-LRNIP-AF-2017/2	310,805,540	23.11.2018	

No	No	Name of the road section	Marz	Length, km	Beneficiary community	Contractor	Number of Contract	Contract price, AMD	End date	Notes
35	**4**	H36 - Movses - Choratan - Norashen, km0+000 - km5+587	Tavush	5.59	2	“Ararat – Chanshin” LLC	CW-NCB-LRNIP-AF-2017/4	731,905,507	29.11.2018	
36	**5**	Berd - Aygedzor - Chinari, km0+000 - km4+450	Tavush	4.40	2	“Tavush CHSHSHS” LLC “Araratchanshin” LLC	CW-NCB-LRNIP-AF-2017/5	369,453,426	23.11.2018	
37	**6**	M6 - Archis, km0+000 - km3+671.8	Tavush	3.67	1	“Kapavor” LLC	CW-NCB-LRNIP-AF-2017/6	445,794,543	23.11.2018	
38	**7**	H32 - Vahramaberd - Hovuni - M1, km0+000 - km5+044, (Vahramaberd km0+000 - km0+631, km0+000 - km0+325, Hovuni)	Shirak	6.00	3	“Mostovik” LLC and “Merdzmoskovyan” OJSC	CW-NCB-LRNIP-AF-2017/9	646,996,898	23.12.2018	
7. Total LRNIP AF Y2, 2018				**25.44**	**13**			**3,236,738,113**		
8. LRNIP AF Y2, 2019										
39	**1**	M1 - Karmrashen - Vosketas - Zovasar, km0+000 - km11+410	Aragatsotn	11.41	4	“AAB Project” LLC	CW-NCB-LRNIP-AF-2017/3	862,958,921	23.06.2019	2018-2019
40	**2**	M2 - Karmrashen,	Vayots Dzor	11.70	2	“Blesk” LLC	CW-NCB-LRNIP-AF-2017/7	1,223,958,379	23.02.2019	2018-2019
41	**3**	Մ2 - Վաղատին - Շենաթաղ, կմ0+000 + կմ13+760	Syunik	13.76	4	"Sisian BUAT" LLC	CW-NCB-LRNIP-AF-2017/8	1,437,505,598	23.06.2019	2018-2019
8. Total LRNIP AF Y2, 2019				**36.87**	**10**			**3,524,422,898**		
9. LRNIP AF Y3, 2019										
42	**1**	Artashat - Upper Artashat - Norashen, km0+000 - km0+949	Ararat	1.14	2	“Kapavor” LLC	CW-NCB-LRNIP-AF-2019/1	143,141,453	18.12.2019	

No	No	Name of the road section	Marz	Length, km	Beneficiary community	Contractor	Number of Contract	Contract price, AMD	End date	Notes
43	**2**	T-2-33 - Deghdzut, km0+000 - km1+360	Ararat	1.36	2	“Kapavor” LLC	CW-NCB-LRNIP-AF-2019/2, lot 1	172,197,445	18.12.2019	
44	**3**	T-2-30 - Upper Artashat - Hnaberd - Getazat, km0+000 - km2+740	Ararat	2.70	3	“Kapavor” LLC	CW-NCB-LRNIP-AF-2019/2, lot 1	197,428,821	18.12.2019	
46	**4**	Talin - Tsamakasar - Nor Artik - /H75/, km0+000 - km10+870 (beginning - from H75)	Aragatsotn- 7.8 km Shirak - 3.8 km	11.01	4	“Blesk” LLC	CW-NCB-LRNIP-AF-2019/3	705,580,676	12.12.2019	
46	**5**	M5 - Sardarapat - Nor Armavir - T-3-52, km0+000 - km6+146	Armavir	6.28	2	“Kapavor” LLC	CW-NCB-LRNIP-AF-2019/4	549,693,947	18.12.2019	
47	**6**	M1 - Hayrenyants - Tufashen - H83, km0+000 - km8+872 (Haykasar km0+000 - km1+579)	Shirak	11.15	4	“Kapavor” LLC	CW-NCB-LRNIP-AF-2019/6	782,633,872	11.12.2019	
9. Total LRNIP AF Y3, 2019				**33.63**	**17**			**2,550,676,214**		
10. LRNIP AF Y3, 2020										
48	**1**	M7 - Mets Parni - Tsaghkaber, km0+000 - km6+240	Lori	7.20	2	“Chanaparh” LLC	CW-NCB-LRNIP-AF-2019/5	663,078,158	03.062020	2019-2020
48	**2**	T-9-21 - Horbaset, km0+000 - km6+500	Vayots Dzor	6.76	3	"Sisian BUAT" LLC	CW-NCB-LRNIP-AF-2019/7	716,930,735	19.10.2020	2019-2020
50	**3**	T-2-30 - Norashen - Dvin - H9, km0+000 - km1+940	Ararat	2.71	2	“Araratchanshin” LLC	CW-NCB-LRNIP-AF-2019/10, lot 1	285,591,188	12.05.2020	2019-2020
51	**4**	T-2-38 - Aygezard, km 0+000 - km 1+910	Ararat	2.14	1	“Araratchanshin” LLC	CW-NCB-LRNIP-AF-2019/10, lot 2	218,502,158	12.05.2020	2019-2020

No	No	Name of the road section	Marz	Length, km	Beneficiary community	Contractor	Number of Contract	Contract price, AMD	End date	Notes
52	**5**	M2 - Getap, km0+000 - km2+100	Vayots Dzor	2.77	1	"Yeghegnadzor CHSHSH" CJSC and "Sisian BUAT" LLC	CW-NCB-LRNIP-AF-2019/11	395,550,386	18.082020	2019-2020
53	**6**	M4 - River valley, km0+000 - km1+404.71	Tavush	1.68	1	"Sisian BUAT" LLC	CW-NCB-LRNIP-AF-2019/12	252,196,326	03.062020	2019-2020
10. Total LRNIP AF Y3, 2020)				**23.26**	**10**			**2,531,848,951**		
11. LRNIP AF2, 2020-2022										
54	**1**	M1 - Nerqin Sasnashen - Metsadzor, km0+000 - km9+130	Aragatsotn	9.765	5	"Blesk" LLC	CW-NCB-LRNIP-AF2-2020/11	941,875,454	01.12.2021	2020-2021
55	**2**	H12 - Noramarg - Hovtashen - M2, km0+000 - km4+160	Ararat	4.4	2	"Kapavor" LLC	CW-NCB-LRNIP-AF2-2020/5	582,264,281	23.07.2021	2020-2021
56	**3**	Lukashin - H17, km0+000 - km3+150	Armavir	3.15	1	"Ararat-Chanshin" LLC	CW-NCB-LRNIP-AF2-2020/2	272,628,025	30.04.2021	2020-2021
57	**4**	M4 - Sevan - Akhtamar complex - M4, km0+000 - km4+737	Geghakunik	5.297	1	"Chanaparh" LLC	CW-NCB-LRNIP-AF2-2020/4	796,014,376	01.11.2021	2020-2021
58	**5**	M11 - Akhpradzor, km0+000 - km7+828	Geghakunik	8.576	1	"Kapavor" LLC	CW-NCB-LRNIP-AF2-2020/12	892,846,466	01.12.2021	2020-2021
59	**6**	M11 - Akhpradzor, km7+828 - km14+480	Geghakunik	6.791		"Kapavor" LLC	CW-NCB-LRNIP-AF2-2020/13	455,640,302	01.12.2021	2020-2021
60	**7**	T-5-32 - Katnajur, km0+000 - km4+370	Lori	4.701	2	"Sisian BUAT" LLC	CW-NCB-LRNIP-AF2-2020/8	597,826,521	10.07.2022	2020-2022

No	No	Name of the road section	Marz	Length, km	Beneficiary community	Contractor	Number of Contract	Contract price, AMD	End date	Notes
61	**8**	T-7-14 - Shirak - Camo, km0+000 - km4+627	Shirak	5.017	2	“Merdzmoskovyan” CJSC	CW-NCB-LRNIP-AF2-2020/8	471,934,884	16.09.2021	2020-2021
62	**9**	Datakert - Nzhdeh - Tsghuni, km0+000 - km5+180	Syunik	5.43	3	"Sisian BUAT" LLC	CW-NCB-LRNIP-AF2-2020/3	433,273,026	15.10.2021	2020-2021
63	**10**	H46 - Khot, km0+000 - km1+963	Syunik	1.963	1	“Charagayt” CJSC and “HAEK construction” CJSC	CW-NCB-LRNIP-AF2-2020/6	202,063,053	11.08.2021	2020-2021
64	**11**	M2 - Noravan, km0+000 - km4+344	Syunik	5.446	1	"Sisian BUAT" LLC	CW-NCB-LRNIP-AF2-2020/9	698,392,013	20.09.2021	2020-2021
65	**12**	M2 - Noravan, Reinforcement of the road section of km 0+000 - km 4+344	Syunik			"Sisian BUAT" LLC	RD-NOR-LRNIP-AF2-SS-2022	181,814,353	18.12.2022	
11. Total LRNIP AF2, 2021				**60.54**	**19**			**6,526,572,753**		
TOTAL (LRNIP, LRNIP AF, LRNIP AF2)				**453.00**	**156**			**48,516,566,855**		

12. LRNIP AF2, 2022 improvement of the accident-prone area

No	No	Name of the road section	Marz	Community	Settlement	Black Spots	A/C km.	Contractor	Contract No	Amount (AMD)	Completion Date
66	1	M6, Vanadzor - Alaverdi - Georgian border km4+780 - km5+100; km5+900 - km6+476	Lori	Vanadzor, Pambak	Vanadzor city, Vahagnadzor	3	-	"Ararat-Chanshin" LLC	CW-NCB-LRNIP-AF2-2022/14 (Lot 1)	20,912,202	16.12.2022
		M4, Yerevan - Sevan - Ijevan km 69+900 - km 71+967	Geghar kunik	Sevan	Tsovagyugh	1	-			7,078,968	16.12.2022
		H-29 Sevan – Tsaghkunk – Zovaber km11+000 - km12+037		Sevan	Ddmashen	1	1.04			119,831,476	16.12.2022
67	2	H-32 M1 – Gyumri - Kaps – Amasia – M1 km2+600 - km3+900; km4+400 - km4+980; km7+380 - km8+020	Shirak	Akhuryan, Gyumri	Marmashen, Vahramaberd, Gyumri city	4	1.10	"Merdzmoskovyan" CJSC	CW-NCB-LRNIP-AF2-2022/16 (Lot 1)	154,867,352	16.12.2022
		H-21 H75 – Horom – Artik – Alagyaz km2+831 - km3+420		Ani	Gusanagyugh	1	-			16,203,576	16.12.2022
68	3	H-15 M5 – Armavir – Argavand – Margara km3+100 - km3+610; km5+900 - km6+060	Armavir	Metsamor	Alashkert, Haykavan	2	0.16	"Arhovshin" LLC	CW-NCB-LRNIP-AF2-2022/16 (Lot 2)	44,543,238	27.12.2022
		H-17 M5 – Armavir – M9 km3+310 - km3+963; km7+750 - km8+805		Armavir	Armavir, Hatsik	2	1.63			271,830,603	27.12.2022
					Total`	**14**	**3.92**			**635,267,415**	

CONSULTING SERVICES

LRNIP

No	Name of the consulting service	Consultant	Date of Contract Signing	Beginning	Completion date	Amount
1	Project social monitoring and evaluation	" Ameria " CJSC and " Media Model" LLC JV:	17/05/2013	20/05/2013	10/12/2016	24,640,000 AMD
2	Technical supervision of road rehabilitation works in the 1st year of the Project	Cox Consult (Germany)	06/05/2013	20/05/2013	06/02/2016	1,296,966 US
3	Design and author control of roads in the 3rd and 4th years of the project and improvement of road traffic collection points	" Road Plan " Institute LLC	27/08/2014	02/09/2014	30/06/2017	1,174,410 US
4	Road Financing Study	Raft international limited (UK)	20/11/2014	20/11/2014	20/07/2015	300,000 US
5	Development of the concept of output and performance-based contracts	Raimo Salanma	30/07/2015	23/08/2015	07/07/2015	68,974 US
6	Technical supervision of road rehabilitation works in the 3rd and 4th years of the Project	Cox Consult (Germany)	29/06/2015	01/06/2015	30/06/2017	2,325,427 US
7	Drafting and EMP development for roads in the 1st year of the Supplementary Funding Program of the CSDP program	" Chanproject " Institute LLC	02/11/2015	02/11/2015	02/06/2016	419,502 US
8	Road safety training and public awareness	" Fred engineering " and "Institute of Public Policy" JV	30/03/2020	01/04/2020	30/10/2020	60,000 US

No	Name of the consulting service	Consultant	Date of Contract Signing	Beginning	Completion date	Amount
9	Author control of road restoration works of the LF 2 project of the National Agricultural Development Fund of Ukraine	Cox Consult (Germany)	09/09/2019	19/10/2020	30/12/2022	65,248,200 AMD
10	Technical supervision of road rehabilitation works of the 2nd year of the LF program of the National Agricultural Research Service of Ukraine	Technical company (Italy)	16/03/2018	23/03/2018	23/06/2020	Euro 247,350.0 USD 380,592.0 AMD 117,490,226.1
11	Independent technical audit for the 1st, 2nd, and 3rd years of the PFSP LF program	"Modul 2015" LLC, "National University of Engineering and Construction " Foundation and " Artsakhchan " Institute CJSC JV	23/09/2017	23/09/2017	30/10/2020	53,250,360 AMD
12	Author supervision of road rehabilitation works of the 3rd year of the LF program of the National Agricultural Research Service of Ukraine	" Chanproject " Institute LLC	01/03/2018	03/06/2019	03/08/2020	45,820,800 AMD

LRNIP AF

No	Advisory of service Name:	Date of Contract Signing	Beginning	Completion	Consultant	Amount
1	Technical supervision of road restoration works of the 1st year of the LF program of the National Road Safety and Environmental Protection Agency	01/09/2016	02/09/2016	16/09/2018	Coke Konsult (Germany)	1,363,515 USD
2	Technical supervision of road rehabilitation works of the 2nd year of the LF program of the National Agricultural Research Service of Ukraine	16/03/2018	23/03/2018	23/06/2020	Technical company (Italy)	Euro 247,350.0 USD 380,592.0 AMD 117,490,226
3	Technical supervision of road rehabilitation works of the 3rd year of the LF program of the National Agricultural Research Service of Ukraine	21/05/2019	31/05/2019	19/02/2021	Coke Konsult (Germany)	1,196,820 USD
4	Drafting and development of the BSMP for the roads of the 2nd year of the LFSP LF program	21/07/2017	21/07/2017	25/05/2018	Road plan Institute LLC	663,672 USD

No	Advisory of service Name:	Date of Contract Signing	Beginning	Completion	Consultant	Amount
5	Author supervision of road rehabilitation works of the 2nd year of the LF program of the National Agricultural Research Service of Ukraine	21/07/2017	23/03/2018	23/06/2019	Road plan Institute LLC	94,536 USD
6	Drafting and development of the BSMP for the roads of the 3rd year of the 3rd year of the LFSP LF program	01/03/2018	01/03/2018	25/09/2018	Road plan Institute LLC	372,928,320 AMD
7	Author supervision of road rehabilitation works of the 3rd year of the LF program of the National Agricultural Research Service of Ukraine	01/03/2018	03/06/2019	03/08/2020	Road plan Institute LLC	45,820,800 AMD
8	Social monitoring and evaluation of the Project of the National Institute of Social Sciences and Humanities	22/08/2016	01/09/2016	31/12/2022	Ameria CJSC	46,102,499 AMD
9	Independent technical audit for the 1st, 2nd, and 3rd years of the PFSP LF program	23/09/2017	23/09/2017	30/10/2020	JV " Modul 2015" LLC, Engineering and Construction national University Foundation, " Artsakhchan " Institute CJSC	53,250,360 AMD
10	Drafting and development of the BSMP for the roads of the LF 2 project of the National Roads and Railways Project	09/09/2019	20/12/2019	20/06/2020	Coke Konsult (Germany)	246,577,800 AMD
11	Author control of road restoration works of the LF 2 project of the National Agricultural Development Fund of Ukraine	09/09/2019	Start of construction	The end of the charm	Coke Konsult (Germany)	55,551,600 AMD

LRNIP AF2

No	Name of the consulting service	Consultant	Date of Contract Signing	Beginning	Completion	Amount
1	Technical audit of the road rehabilitation works of the LF2 project of the National Road Safety Project	" SUFET " LLC	12/02/2021	12/02/2021	30/09/2022	84,900,000 AMD

No	Name of the consulting service	Consultant	Date of Contract Signing	Beginning	Completion	Amount
2	Vital road network 2022-2026 . developing a strategic development plan	JV "SPT - Stadi e Pianificazione del Territorio " and "NET Engineering » (Italy)	16/03/2022	01/04/2022	30 /1 2 /2022	136,000 Euros
3	2020 of the KNCTSB program (loan no. 8229AM) and the KNCTSB LF program (loan no. 8523AM) . on December 31, 2021 on December 31 of the ending years and 2020 of the LF2 program of the National Research Council of Ukraine (loan No. 8957AM) . from May 17 until 2020 _ _ December 31 _ fallen period and 2021 . _ on December 31 ending audit of the financial statements of the year (which also includes the grace period)	"Grant Thornton " CJSC	22/06/2021	22/06/2021	30/04/2023	12,465,275 AMD
4	Technical support for assessing the risks of natural disasters threatening RA road infrastructures	" Georisk " scientific research company CJSC	11/05/2022	16/05/2022	16/12/2022	134,299,998 AMD
5	Technical supervision of road restoration works of the LF2 project of the National Agricultural Research Service of Ukraine	Cox Consult (Germany)	30/09/2021	12/10/2020	12/12/2022	1,585,473.5 USD
6	Preparation of designs and SOPs for Black Spot remediation works	" Chanproject " Institute LLC	27/08/2021	07/09/2021	25/02/2022	115,827,120 AMD
7	Black Spot improvement works	" Chanproject " Institute LLC	27/08/2021	04.10.2022	04.05.2023	5,781,960 AMD
8	Road safety education and public awareness campaign	JSC "FRED Engineering " (Italy) and " Institute of Public Policy " (Armenia)	23/09/2022	23/09/2022	23/12/2022	17,000 USD

No	Name of the consulting service	Consultant	Date of Contract Signing	Beginning	Completion	Amount
9	Development of the implementation and final report of the vital road network improvement project	Individual consultant Tigran Grigoryan	14/09/2022	15/09/2022	25/12/2022	8,000,000 AMD
10	Black spot improvement works under the second supplementary funding program of the Vital Road Network Improvement Program	J/D "FRED Engineering " (Italy) and " YArD iEngineering " (Italy)	27/09/2022	27/09/2022	27/12/2023	153,419.04 euros

Appendix 4 – List of Documents Used

1. Road baseline survey reports
2. Road rehabilitation final reports
3. Project progress reports
4. World Bank mission notes
5. Road design reports and ESMP
6. Project loan agreements and term extension notes/agreements
7. Social monitoring and evaluation reports
8. Project operational manual
9. Contracts
10. Road funding survey reports
11. Black point design reports
12. Road network management system slide
13. Purchase plans

Appendix 5 – Interview Guideline

Interviewer's Guide

In 2013-2022 the *Road Department fund* implemented the Lifeline Road Network Improvement Project ((LRNIP) hereinafter referred to as Project)". At the final stage of the Project, the Project Implementation and Completion Reports are being developed, within the framework of which interviews are conducted with Project beneficiaries, Project staff, representatives of relevant ministries and other state agencies, representatives of local self-government and territorial administration bodies, contractors and other local and international partners.

Date of the interview

Interviewee's name, last name, position

Name of the interviewee's organization/institution

Department

Guiding Questions
Was the initial design of the Project, as well as the amendments to the Project, in line with the actual needs and challenges, and the strategic priorities of the given domestic sector?
To what extent were the amendments to the draft Project substantiated?
Submit your observations and considerations regarding the level of achievement and effectiveness of the Project's results in the context of institutional reforms in the sector.
Submit your observations and considerations regarding the impact of the Project's results. Address the financial, technical, environmental, social and economic components of the Project.
Submit your observations and considerations regarding the impact of the Project's results. Address the issues of community development from the perspectives of activating the public life, providing solutions to gender, as well as economic and employment issues.
Submit your observations and considerations regarding the effectiveness of the Project implementation process.
Submit your observations and considerations regarding the effectiveness of the Implementing agency-World Bank cooperation.
Submit your observations and considerations regarding the sustainability of the Project results.

Submit your observations and considerations regarding the relevance of the results as far as Project goals and objectives are concerned (Did project results contribute to the achievement of project objectives?).
List the external factors that had a significant impact on Project performance and the results
How would you rate the effectiveness of the resources spent on achieving the Project's target indicators? Rate the effectiveness on a scale of 1-6: 1 - was not effective at all 2 - was not effective 3 - was not nearly as effective 4 - was almost effective 5 - was effective 6 - was very effective
List the risks affecting the Project results in terms of their sustainability: financial, technical, environmental, social and economic risks.
Submit your observations and considerations regarding the effectiveness of Project monitoring and evaluation methodology and implementation.
Evaluate the effectiveness of the *Safe Village* initiative implemented within the framework of the Project. Submit your observations and considerations. Rate the effectiveness on a scale of 1-6 where: 1 - was not effective at all 2 - was not effective 3 - was not nearly as effective 4 - was almost effective 5 - was effective 6 - was very effective
Traffic safety/observations on Black spots

Appendix 6 – Roads Observed Under Socio-Economic Impact Analysis

LRNIP

Phase 1 (2013-2014)
R1 M-1 Agarak-Byurakan-Antarut (km0+000-km8+650)
R2 M-7 Arevashogh (km0+000-km2+500)
R3 M-10 Nerkin Getashen-Verin Getashen-Madina (km0+000-km10+100)
R4 Mayakovski-Nor Gyugh-Kotayk-Kaputan-Hatis-Zovashen (km0+000-km4+500, km7+000-km19+800)
R5 M-9 Arteni-Aragats-Getap (km25+940-km49+250)
R6 M-12 Kornidzor (km0+000-km4+500)
R7 M-5 Nor Kesaria-Shenavan-Getashen (km1+900-km6+700)
Phase 2 (2015-2016)
R1 Lori, M6Agarak – Yaghdan – Koghes, Mghart, Arevatsag – Karmir Aghek, Tsater – Aygehat – Ardvi - Odzun
R2 Syunik, Shaki – Sisian – Tolors – Bnunis – Torunik – Dastakert
R3 Kotayk, H5 – Argel – Karenis – Charentsavan
R4 Armavir, Norapat – Mrgashat – Arevik – Yeghegnut – Yeraskhahun
R5 Aragatsotn, M3-Ashtarak - Oshakan, Dasht
R6 Kotayk, M1-Abovyan – Nor Geghi – Yeghvard.

LRNIP AF

1-st Year Roads
R1- Kotayk marz- H1-Hrazdan-H55 km0+000-km3+290, km0+000-km0+627
R2- Gegharkunik marz- Martuni-Vaghashen-Vardenik km 0+000 - km 10+500
R3- Gegharkunik marz- M-11 Martuni-Vardenis km 6+500 - km 10+834
R4- Armavir marz- N-1 street of Janfida community km 0+000-km 2+604
R5- Syunik marz- M-2-Sisian km 0+000-km 5+872
R6- Gegharkunik marz- Yeranos-Tsakqar - km 0+000-km 7+253
R7- Shirak marz- Maralik-Karaberd-Dzithankov section km0+000-km11+100
R8- Kotayk marz- H6-Nor Gehi-Argel-Arzakan-Hrazdan section km10+000-km25+232

2-nd Year Roads
R1 Ararat Arevshat-Abovyan
R2 Ararat T-2-20 Ditak-Jrashen
R3 Ararat H8-T2-16-Hovtashen (Mrgavet-/M-2/-1.3km,/M-2/-Hovtashen-1.1 km)
R4 Aragatsotn M1-Karmrashen-Zovasar
R5 Tavush Berd-Aygedzor-Chinari 3.4 km asphalting works
R6 Tavush H36-Movses-Choratan-Norashen
R7 Tavush M6-Artchis
R8 Vayots Dzor M2-Karmrashen
R9 Syunik M2-Vaghatin-Shenatagh
R10 Shirak H32-Vahramaberd-Hovuni-M1

3-rd Year Roads		
R1	Ararat	Artashat-Verin Artashat-Norashen km0+000 - km0+949
R2	Ararat	T-2-33 Deghdzut km0+000 - km1+360
R3	Ararat	T-2-30 Verin Artashat-Hnaberd-Getazat km0+000 - km2+740
R4	Aragatsotn/Shirak	Talin-Tsamakasar-Nor Artik-/H75/ (Tsamakasar-Suser-Nor Artik) km0+000 - km10+870
R5	Armavir	M5-Sardarapat-Nor Armavir -T-3-52 km0+000 - km6+146
R6	Lori	M7-Mets Parni- Tsakhkaber km0+000 - km6+240
R7	Shirak	M1-Hayrenyats-Tufashen-H83 (Haykasar) km0+000 - km8+872, km0+000 - km1+579
R8	Vayots Dzor	T-9-21 - Horbategh km0+000 - km6+500
R9	Vayots Dzor	M2-Getap km0+000 - km2+100
R10	Tavush	M4-Getahovit km0+000 - km1+404.71
R11	Ararat	T-2-30-Norahsen-Dvin-H9 km 0+000 - km 1+940
R12	Ararat	T-2-38 – Aygezard km 0+000 - km 1+910

LRNIP AF2

R1	Armavir region	Lukashin-H17 3.2km
R2	Syunik region	Dastakert - Nzhdeh - Tsghuni 5.4km
R3	Gegharkunik region	M11-Akhpradzor km0+000-km7+828
R4	Gegharkunik region	M11-Akhpradzor km7+828-km14+480

R5	Aragatsotn region	M1 - Nerkin Sasnashen – Metsadzor km 0+000 - km 9+130
R6	Ararat region	H12-Noramarg-Hovtashen-M2 km 0+000 - km 4+160
R7	Gegharkunik region	M4-Sevan-Akhtamar complex-M4 km 0+000 - km 4+737
R8	Lori region	M6-Yeghegnut-Debed km 0+000 - km 7+183
R9	Lori region	T-5-32-Katnajur km 0+000 - km 4+370
R10	Syunik region	M2-Noravan km 0+000- km 4+344
R11	Syunik region	H46-Khot km 0+000 - km 1+963
R12	Shirak region	Shirak-Kamo

Appendix 7 – Jobs Created During the Project

№:	Months	Number of temporary jobs, man				Notes
		Monthly	Average monthly	Minimum	Maximum	
LRNIP Y1, 2013-2014						
1	June 2013	105				
2	July 2013	151				
3	August 2013	189				
4	September 2013	262				
5	October 2013	295			**295**	
6	November 2013	278				
7	March 2014	42				
8	April 2014	42	**104**			
9	May 2014	57				
10	June 2014	35				
11	July 2014	41				
12	August 2014	11		11		
13	September 2014	15				
14	October 2014	19				
15	November 2014	17				**7 roads 19 communities**
LRNIP Y3-Y4, 2015-2016						
1	June 2015					
2	July 2015					
3	August 2015					
4	September 2015	392	**56**			
5	October 2015					
6	November 2015					
7	December 2015					**10 roads 30 communities**

№:	Months	Number of temporary jobs, man				Notes
		Monthly	Average monthly	Minimum	Maximum	
LRNIP Y3-Y4, 2015-2016						
1	June 2015	58	**70**			**5 roads 16 communities**
2	July 2015	78				
3	August 2015	90				
4	September 2015	94				
5	October 2015	101				
6	November 2015	103			**103**	
7	December 2015	87				
8	March 2016	30				
9	April 2016	41				
10	May 2016	59				
11	June 2016	84				
12	July 2016	80				
13	August 2016	49				
14	September 2016	23		23		
LRNIP AF Y1, 2016-2017						
1	September 2016	225	**132**		**225**	**8 roads 22 communities**
2	October 2016	188				
3	November 2016	146				
4	December 2016	106				
5	March 2017	45		45		
6	April 2017	116				
7	May 2017	166				
8	June 2017	173				
9	July 2017	154				
10	August 2017	138				
11	September 2017	118				
12	October 2017	94				
13	November 2017	51				

№:	Months	Number of temporary jobs, man				Notes
		Monthly	Average monthly	Minimum	Maximum	
LRNIP AF Y2, 2018-2019						
1	March 2018	248	**141**			**10 roads 23 communities**
2	April 2018					
3	May 2018	260				
4	June 2018	268			**268**	
5	July 2018	252				
6	August 2018	236				
7	September 2018	164				
8	October 2018	147				
9	November 2018	112				
10	December 2018	60				
11	March 2019	23		23		
12	April 2019	23				
13	May 2019	34				
14	June 2019	37				
LRNIP AF Y3, 2019-2020						
1	June 2019	115	**96**			**12 roads 27 communities**
2	July 2019	139				
3	August 2019	190				
4	September 2019	177				
5	October 2019	186				
6	November 2019	211			**211**	
7	December 2019	173				
8	January 2020	35				
9	February 2020	46				
10	March 2020	67				
11	April 2020	82				
12	May 2020	61				
13	June 2020	20		20		
14	July 2020	25				
15	August 2020	36				
16	September 2020	28				
17	October 2020	35				

№:	Months	Number of temporary jobs, man				Notes
		Monthly	Average monthly	Minimum	Maximum	
LRNIP AF2, 2020-2022						
1	October 2020	62	**107**			**12 roads 19 communities**
2	November 2020	87				
3	December 2020	75				
4	March 2021	31				
5	April 2021	147				
6	May 2021	195				
7	June 2021	219			**219**	
8	July 2021	198				
9	August 2021	190				
10	September 2021	159				
11	October 2021	153				
12	November 2021	151				
13	December 2021	29				
14	May 2022	8				
15	June 2022	9				
16	July 2022	5		5		