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PROJECT PERFORMANCE ASSESSMENT REPORT



GEORGIA

Secondary and Local Roads Project
and Kakheti Regional Roads
Improvement Project

Report No. 149697

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PROJECT PERFORMANCE ASSESSMENT REPORT

GEORGIA

**SECONDARY AND LOCAL ROADS PROJECT
(LOAN NO. IBRD-76710 AND CREDIT NO. IDA-39390)**

**KAKHETI REGIONAL ROADS IMPROVEMENT PROJECT
(LOAN NO. IBRD-78020)**

June 17, 2020

Financial, Private Sector, and Sustainable Development

Independent Evaluation Group

Abbreviations

HDM-4	Highway Design and Maintenance Model
IEG	Independent Evaluation Group
M&E	monitoring and evaluation
PAD	Project Appraisal Document
PDO	project development objective
SLRP	Secondary and Local Roads Project

All dollar amounts are US dollars unless otherwise indicated.

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This report was prepared by Elisabeth Goller with the support of Doruk Yarin Kiroglu and Sergo Tsipa, consultants, who assessed the project in October 2019. The report was peer reviewed by Gylfi Palsson and panel reviewed by Christopher David Nelson. Mariam Ghambashidze, Richard Kraus, and Vibhuti Narang Khanna provided administrative support.

Preface

This is a Project Performance Assessment Report (PPAR) by the Independent Evaluation Group of the World Bank Group on the Georgia Secondary and Local Roads Project (P086277) and the Kakheti Regional Roads Improvement Project (P117152). The projects were selected for a PPAR as part of a cluster of assessments of subnational roads projects with strong technical assistance components. This cluster will be used to document how and why different institutional, operational, and capacity strengthening measures in the road sector worked or did not work and to draw lessons from the experiences.

The Secondary and Local Roads Project was approved by the Board of Executive Directors on June 24, 2004, and became effective on October 21, 2004. The original closing date was October 31, 2009. The project closed on June 30, 2012.

The Kakheti Regional Roads Improvement Project was approved by the Board on November 10, 2009, and became effective on December 8, 2009. The original closing date was November 30, 2013. The project was restructured on November 20, 2013, and the closing date was extended by 21 months to August 30, 2015.

This PPAR presents its findings and conclusions based on a review of the World Bank's project documentation and analytical studies, combined with a field mission to Georgia carried out from October 8 to 18, 2019.

Following standard Independent Evaluation Group procedure, a copy of the draft PPAR was shared with relevant government officials for their review and comments.

Summary

Project Background and Description

Trade is important for Georgia's economy, and good transport links are essential to promote and sustain it. Roads are the main mode of transport in the country. Therefore, upgrading and managing roads adequately is vital to sustained economic growth.

Since the mid-1990s, the World Bank has supported the road department of Georgia's Ministry of Infrastructure and Development through a series of operations preceding, concomitant, and succeeding the Secondary and Local Roads Project and the Kakheti Regional Roads Improvement Project, the subjects of this assessment. This continued support enabled a sustained policy dialogue, technical assistance, and institutional support over an extensive period and facilitated sector management improvements, which would not have been possible through a single project.

These two projects were the first World Bank projects that focused on secondary and local roads in the country. Previous operations focused on highways and other transport modes. Secondary and local roads both support the country's economy by providing access to agriculture areas and tourism sites and are important to improving people's living standards by facilitating access to markets and services, for example.

The key finding of this Project Performance Assessment Report is that the two projects contributed to improved road management in Georgia linked to strong government commitment and continuous World Bank support, though results were limited for certain project components mainly because of design and implementation shortcomings.

Results

The Independent Evaluation Group (IEG) found that the two projects succeeded in contributing to improved road management in Georgia in four areas. First, they helped the road department improve the physical condition of its secondary road network and advocated for a sustainable road maintenance model, which ensures basic maintenance of the road department's total network. Even if the maintenance quality is not uniform across the road network, this is a significant achievement compared with many other World Bank client countries. The approach to road maintenance appears sustainable in light of the increased and substantial budget allocations over time.

Second, the projects introduced the country to new road contracting modalities intended to enhance the quality and overall life of roads. Early problems in the implementation of these contracts in Georgia were similar to those in many countries. A larger use of these new modalities is under way. IEG's attempt to assess the benefits of these contracts in

the Georgian context confirmed quality improvements, and the design and build contract resulted in time savings. Their cost appeared higher compared with traditional contracts, but the different project scope and the difficulties of comparing costs across different contracting modalities might explain this.

Third, the country enhanced its road safety culture through the projects' focus on road safety and the World Bank's support. Georgia adopted a road safety strategy and largely complies with its annual road safety action plans. The country also established critical road safety legislation and has improved its accident database over time. IEG observed large differences in road safety features between older roads and roads that were rehabilitated more recently. The road department has been improving its road safety practices. Enforcement has improved in recent years mainly through the extensive use of cameras, even though speeding is still an issue. Because of these factors, the number of road deaths per 100,000 people declined from a five-year average of 18.62 between 2005 and 2009 to 14.34 between 2014 and 2019.

Finally, the World Bank contributed to more efficient road planning by supporting the development of a simple and effective road asset management system. The road department has constantly improved this system under successive World Bank projects and has been using it regularly for road rehabilitation and maintenance planning for a decade. The regular use of a road asset management system for planning and budgeting in developing countries is an important achievement.

Design and Preparation

The successful use of the road asset management system in road planning can be attributed at least partly to the system's simple and gradual design. This makes it relatively inexpensive to maintain. The low cost, combined with the need for the system to report on project results, also helped ensure its survival during times when the arrival of new management questioned its usefulness. Among the other success factors, IEG observed strong enthusiasm in the small, dedicated planning team and continuity in the support from an individual local consultant over more than a decade.

However, design and preparation shortcomings likely explain why the projects' road safety results were limited, despite the shift in Georgia's road safety culture. A shortcoming was the holistic approach to road safety. Although such an approach is in line with best practice, it was too ambitious for a subcomponent in a small, regional road project with a limited budget. Other shortcomings included weaknesses in the project's implementation arrangements, the monitoring and evaluation design, and the causal link between the road safety activities and the project objective.

Design flaws also largely explain why the road department did not strengthen its capacity to promote community participation in road planning at the local level. This happened mainly because the real need for this type of capacity strengthening is questionable. The roads to be improved were mostly semiurban. As such, their selection is generally based on a cost-benefit approach, which makes community participation at the local level less essential. In addition, the road department has a limited role concerning local roads.

Implementation and Supervision

Many of the results described would not have been possible without thorough implementation and adequate supervision. What did not work was the restructuring of the Secondary and Local Roads Project, which had several shortcomings. First, the theory of change was not plausible because the new subobjective of strengthening the capacity of local governments to manage their road networks in a cost-effective and sustainable manner was to be achieved through the production of a local road management and maintenance resource manual and workshops for local governments on local roads management and maintenance only. These may have been necessary but were not enough. Second, the road department did not have a formal role in local governments and roads, and local governments were not part of the project. Third, the road department did not seem to own the new subobjective and related activities. Finally, the new subcomponent was a one-time activity not sustained over time.

Appendix A describes IEG's project performance assessment ratings.

Lessons

This assessment offers the following key lessons of experience:

- **It is impossible to implement a holistic road safety approach through a small, regional project without the formal involvement of key road safety stakeholders.** In this case, not all road safety activities were implemented as planned, and the road safety subobjective was not achieved. In hindsight, this was mainly because of the small size of the road safety activities, the project's regional nature, and, above all, the lack of inclusion of the key road safety stakeholders as project implementation agencies.
- **A sustained engagement on road safety over time can help transform the road safety culture in a country.** The Georgian experience showed that, even if the road safety activities under both projects were not successful, the World Bank's insistence on road safety activities in all its road projects, the provision of capacity strengthening for the road agency, regular outreach to road safety

stakeholders (including civil society), and support through technical assistance helped the country realize the urgency of the need for action and promoted the road safety agenda. However, the cultural shift related to road safety took time to materialize and depended on a sustained engagement over time.

- **Upgrading a road that is barely passable can make it less safe despite the implementation of road safety engineering measures.** The road department carried out a road safety audit in the design phase, implemented road safety engineering measures, and organized a one-time road safety campaign. Nevertheless, the number of road fatalities increased. Because road improvements lend themselves to speeding, more than just normal road safety engineering measures are required to make a new road safe, including, above all, speed restrictions and their strict enforcement.
- **Measuring improved road safety resulting from project interventions requires a carefully designed approach.** In Georgia, road safety improvements were measured through the difference in fatality numbers at two points of time in a specific region. This raised attribution issues. To avoid some shortcomings, the number of fatalities could have been weighted by the vehicle-kilometers driven, population, or any other relevant parameter for the region. The indicator could also have looked at annual weighted averages for several years instead of two points of time only. A control group for a similar region should have been established. Finally, instead of or in addition to measuring the number of fatalities in a region, indicators could have been devised to assess the impact of individual road safety measures to help improve such measures in the future.
- **The successful introduction of performance-based maintenance and rehabilitation contracts requires contractors to be aware of the paradigm shift such contracts imply to avoid financial losses.** Before launching the first new contract, the road department organized a workshop for the construction industry and provided contractors with the opportunity to ask questions in the prebid meeting. This was not enough, and contractors had difficulty grasping the lump sum payment concept and shifting to the long-term planning perspective of “you invest today to save tomorrow,” which the new contract modality entails. It led to several missed performance targets, the need to redo works, and financial losses to the contractors.

José Carbajo Martínez
Director, Financial, Private Sector, and Sustainable Development
Independent Evaluation Group

1. Background, Context, and Design

1.1 This is a Project Performance Assessment Report by the Independent Evaluation Group (IEG) of the World Bank Group on the Georgia Secondary and Local Roads Project (SLRP; P086277) and the Kakheti Regional Roads Improvement Project (P117152), or the Kakheti Project. The assessment aimed at identifying what worked and what did not work under the two projects and why.

1.2 The key finding is that the SLRP and Kakheti Project contributed to improved road management in Georgia linked to strong government commitment and continuous World Bank support, though results were limited for certain project components largely related to design and implementation shortcomings.

1.3 Trade is important for Georgia's economy, and good transport links are essential to promote and sustain it. Roads are the main mode of transport in the country. Therefore, upgrading and managing the roads adequately are vital to sustained growth.

1.4 Since the mid-1990s, the World Bank has supported the road department of Georgia's Ministry of Infrastructure and Development through a series of operations preceding, concomitant, and succeeding the two projects. This continued support enabled a sustained policy dialogue, technical assistance, and institutional support over an extensive period and facilitated sector management improvements, which would not have been possible through a single project.

1.5 The two projects to be assessed were the first projects that focused on secondary and local roads. Previous World Bank operations focused on highways and other transport modes. Secondary and local roads both support the country's economy by providing access to agriculture areas and tourism sites and are important to improving people's living standards. Although secondary and local roads make up most of the country's road network, about 20,500 kilometers (of a total network of about 22,000 kilometers),¹ at appraisal of the two projects, these roads were and, especially the local roads, still are in bad condition.

1.6 The following is an overview of the two projects, subject to this assessment.

Objective, Design, Costs, and Financing

Georgia Secondary and Local Roads Project (P086277)

1.7 The original project development objective (PDO) was to "(i) upgrade and rehabilitate secondary and local roads networks and (ii) strengthen the road department of the Ministry of Infrastructure and Development's capacity to promote community

participation in road management and manage road networks in a cost effective and sustainable manner.”

1.8 The project underwent an additional financing and four restructurings, which scaled up the scope of the project mainly in road rehabilitation; changed, dropped, or added activities; extended the closing date; and revised the PDO to “(i) upgrade and rehabilitate the secondary and local roads networks and (ii) increase the roads department of the Ministry of Regional Development and Infrastructure’s and local governments’ capacity to manage the road network in a cost effective and sustainable manner.”

1.9 The project was structured around three components. Component 1: rehabilitation of secondary and local roads originally envisioned to rehabilitate approximately 500 to 750 kilometers of paved secondary and local roads. In 2006, the kilometers to be rehabilitated decreased to 250 because of the use of higher standards, worse road conditions, and roadwork cost increases. The 2009 additional financing and restructuring scaled up the project, and the kilometers of roads to be rehabilitated increased to 700. The 2010 restructuring increased the kilometers of roads to be rehabilitated to between 840 and 880. This was possible because of lower bid prices than budgeted.

1.10 Component 2: Strengthening of road sector institutions focused on improving engineering standards and data collection capabilities, establishing between four and six regional offices for network and works monitoring, developing and implementing regional road maintenance plans, improving interactions with local communities, and enhancing traffic safety. The 2009 additional financing and restructuring added capacity strengthening activities for the road department and its six regional offices in management and maintenance of the secondary road network and for local government in management and maintenance of the local road network.

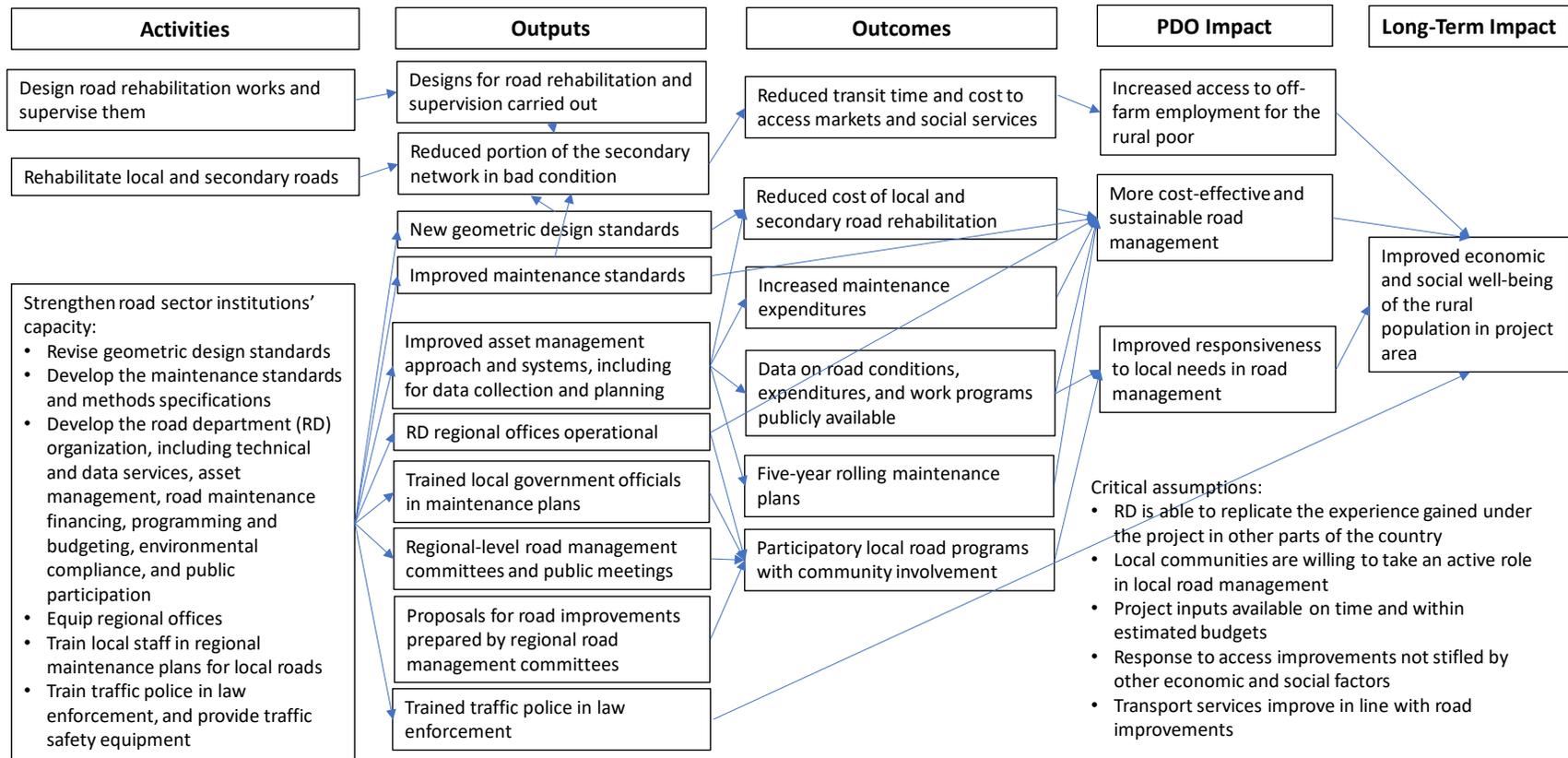
1.11 Component 3: Designing and supervising road rehabilitation envisioned financing the design and supervision of road works and midterm review reports. The 2009 additional financing and restructuring specified that this would include designs for about 150 kilometers and roadwork supervision services for about 450 kilometers, in addition to the original 130 kilometers, totaling 730 kilometers. The 2010 restructuring increased this amount to 840 kilometers.

1.12 Figures 1.1 and 1.2 show the original project’s theory of change (as reconstructed by IEG based on the Project Appraisal Document [PAD]) and the revised theory of change based on the additional financing and restructuring.

Figure 1.1. Simplified Original Theory of Change

Original PDO: To upgrade and rehabilitate secondary and local roads networks

To strengthen the road department of the Ministry of Infrastructure and Development’s capacity to promote community participation in road management and manage road networks in a cost-effective and sustainable manner

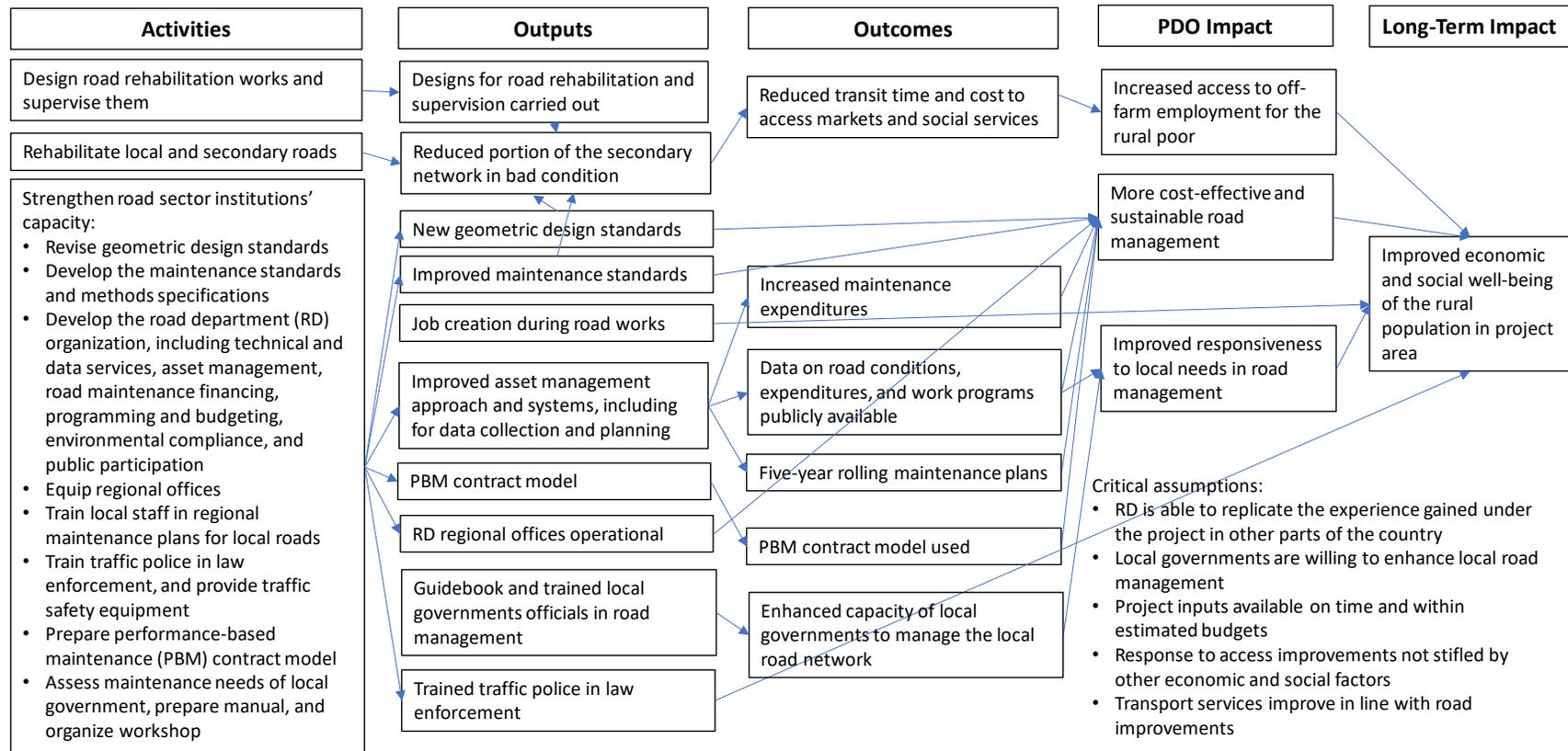


Source: Independent Evaluation Group, based on Project Appraisal Document (World Bank 2006).

Note: PDO = project development objective; RD = road department.

Figure 1.2. Simplified Revised Theory of Change

Revised PDO: To upgrade and rehabilitate secondary and local roads networks
 To increase the roads department (RD) of the Ministry of Regional Development and Infrastructure’s capacity to manage the road network in a cost-effective and sustainable manner
 To increase the local governments’ capacity to manage the road network in a cost-effective and sustainable manner



Source: Independent Evaluation Group, based on Project Appraisal Document (World Bank 2006) and project paper (World Bank 2009b).
 Note: PBM = performance-based maintenance; PDO = project development objective; RD = road department.

1.13 The actual project cost was \$132.10 million, compared with an appraisal estimate of \$27.44 million and an additional financing estimate of \$127.44 million. The project was financed by an International Development Association credit of special drawing rights 13.8 million, equivalent to \$21 million, and an International Bank for Reconstruction and Development loan of \$69.69 million.

Kakheti Regional Roads Improvement Project (P117152)

1.14 The PDO was to “reduce transport costs and improve access and traffic safety for the Kakheti regional roads.” The project was structured around three components. Component 1: Improvement of the road linking Vaziani, Gombori, and Telavi was to finance the improvement of the road from Vaziani to Gombori and Telavi. The 2013 restructuring added the rehabilitation of the Sasadilo-Sioni road under a design and build contract.

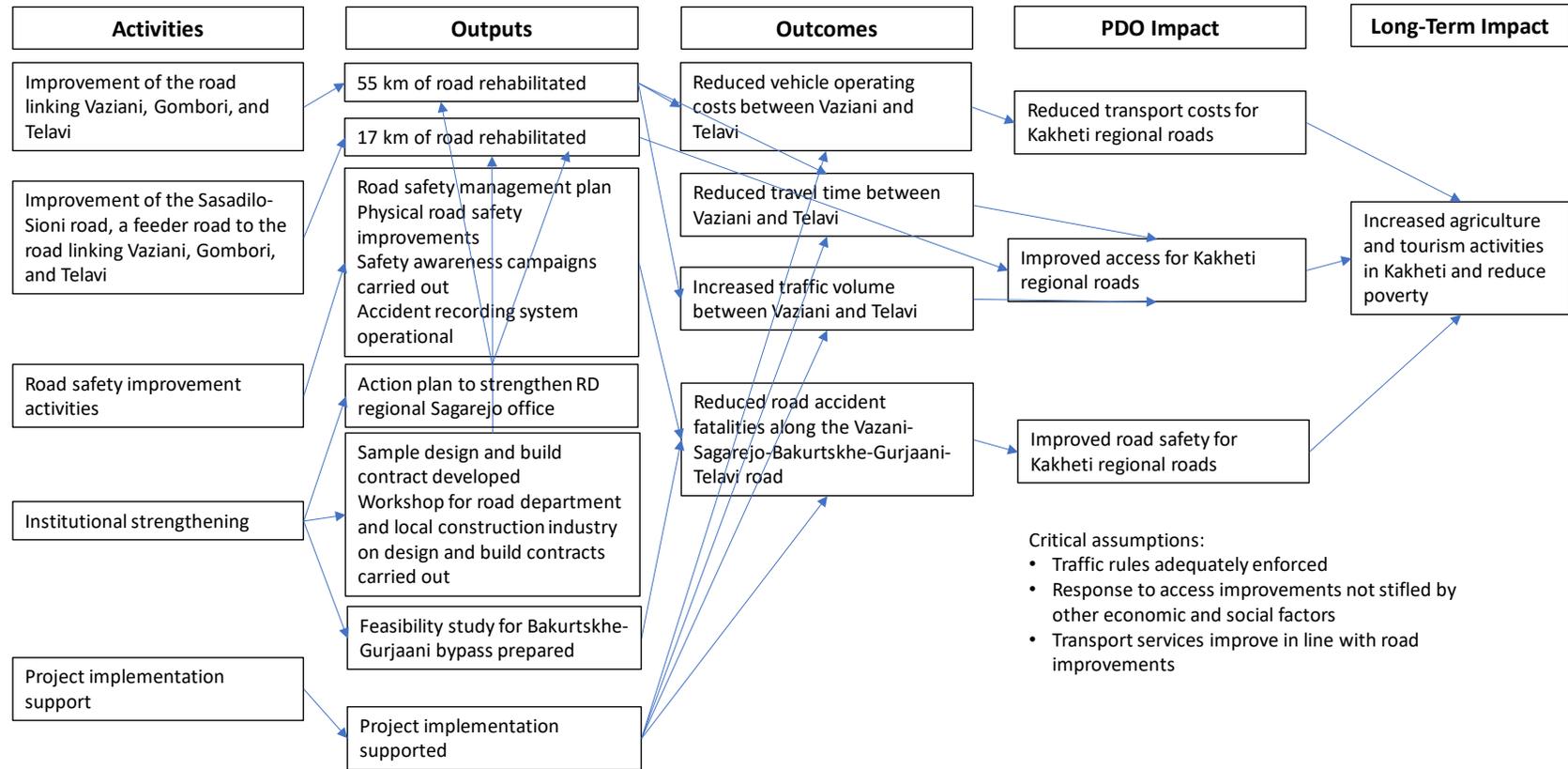
1.15 Component 2: Road safety improvement and institutional strengthening envisioned road safety improvements along the Telavi-Gurjaani-Bakurtsikhe-Sagarejo-Vaziani road and capacity strengthening for the road department’s regional office in Sagarejo. The 2013 restructuring canceled this capacity strengthening activity because the road department abolished the regional office. The activity was replaced by capacity building for the road department and the local construction industry in design and build contracts, and a feasibility study and the environmental impact assessment for the Bakhurtsikhe to Gurjaani bypass.

1.16 Component 3: Project implementation was to finance institutional support to the road department and the Transport Reform and Rehabilitation Center for project implementation, audits, and monitoring and evaluation (M&E).

1.17 Figure 1.3 shows the project’s theory of change as reconstructed by IEG.

Figure 1.3. Simplified Theory of Change

PDO: To reduce transport costs and improve access and traffic safety for the Kakheti regional roads



Source: Independent Evaluation Group, based on the Project Appraisal Document (World Bank 2009c).

Note: km = kilometers; PDO = project development objective; RD = roads department.

1.18 The actual project cost was \$36.47 million, compared with an appraisal estimate of \$37.50 million. An International Bank for Reconstruction and Development loan of \$30 million financed the project.

2. What Worked, What Didn't Work, and Why?

Results

2.1 The SLRP and the Kakheti Project contributed to improved road management in Georgia. Both projects helped improve the secondary road network and advocated for a sustainable road maintenance model. The projects introduced the country to new road contracting modalities intended to enhance the quality and overall life of roads. Through the projects' focus on road safety and the World Bank's support, the country shifted its culture in terms of road safety. Finally, the SLRP contributed to more efficient road planning by supporting the development of a simple and effective road asset management system.

2.2 The road department improved the condition of its secondary road network, and it has been striving to ensure the sustainability of the road improvements. This is a significant achievement compared with many other World Bank client countries. The projects contributed to significantly improving the condition of the secondary road network, which makes up 78 percent of the roads managed by the road department. The projects provided financing to rehabilitate about 15 percent of this network. In 2004, 70 percent of secondary roads were in bad condition. In 2012, the secondary roads in bad condition decreased to 40.7 percent, and in 2018, they declined further to 30.5 percent.

2.3 The road department has been providing basic maintenance for all of its roads,¹ but the quality of the maintenance works is not uniform, and prioritization of maintenance expenditures seems to take place. During the field visits, IEG drove on more than 20 secondary and international roads and found that basic routine maintenance on these roads had been carried out, and road pavements were in good to fair condition. Potholes were rare, about half of the cracks were adequately sealed, and some sections had recent overlays. Maintenance had often been neglected for other road elements, such as shoulders, drainage systems, and road safety furniture. IEG also observed that the maintenance was more complete on international and high-volume roads than it was on secondary, low-volume roads. This seems to indicate that maintenance is prioritized. Road department staff at headquarters confirmed that maintenance works are prioritized based on traffic volumes and the strategic importance of certain roads. Although prioritization in road maintenance works makes sense when resources are limited, more comprehensive maintenance would help extend the life of the road network further.²

2.4 The road department's approach to maintenance appears sustainable. There are several factors that support this conclusion. First, Georgia steadily increased the budget for routine maintenance even though it abolished a dedicated road fund in 2005. From 2012 to 2018, average routine maintenance expenditures amounted to 9 percent of the road department's total construction and rehabilitation expenditures, which include periodic maintenance.³ The routine maintenance budget increased on average by 22 percent annually.

2.5 Second, the road department has been striving to bring all of its networks to a maintainable condition. The five-year rolling rehabilitation and periodic maintenance plan aims at reducing the share of the secondary network in bad condition to 10 percent by 2022. This will require an annual allocation of about GEL 250,000 for rehabilitation, which is in line with the average allocation from 2017 to 2019.

2.6 Third, the road department spent a significant amount of resources on maintenance and rehabilitation. Between 2012 and 2018, on average 39 percent of the road department's budget went to maintenance and rehabilitation, which includes periodic maintenance. During 2017 and 2018, however, this percentage dropped to about 30 percent not because of a reduction in the amount allocated to maintenance and rehabilitation, but because of the significant increase in the resources for the completion of the East-West Highway. When IEG asked road department staff how Georgia managed to constantly increase maintenance financing, they noted, "They have a good management." This means a management that understands the importance of maintenance, and there is more attention to maintenance and a strong control on each GEL spent.

2.7 Fourth, roads are a key priority for Georgia. The spending for the road sector overall increased significantly, reaching about 10 percent of Georgia's annual budget in 2017 and 2018. This corresponds to between 3 percent and 4 percent of Georgia's gross domestic product, which is high when compared with other countries.⁴ This level of spending seems sustainable, at least in the short term. Georgia has had a sustained gross domestic product growth of about 4 percent in the past decade, driven by consumption and high rates of investment, with mostly negative contributions from net exports. The fiscal year 2019–22 Country Partnership Framework considered Georgia's growth outlook positive over the medium term (World Bank 2018a). In addition, World Bank staff and government officials noted that with the completion of the East-West Highway between 2023 or 2025, the pressure on the budget will be reduced.

2.8 Although the road investments' sustainability largely depends on Georgia's maintenance resource allocation, IEG found that the World Bank strongly advocated for adequate road maintenance. The PAD insisted on adequate maintenance funding, and the World Bank team monitored the maintenance budget allocations closely during

project implementation. Road department staff confirmed the World Bank's role in advocating for sufficient maintenance financing and noted that the discussions on innovative contracting methods under the SLRP started to ensure adequate maintenance.

2.9 Georgia has had success in introducing new roadwork contracting modalities. Early problems in the implementation of the design and build and performance-based rehabilitation and maintenance contracts in Georgia were reasonable and common in many countries, and a large use of these modalities is under way.^{5, 6} The road department awarded the first design and build contract under the Kakheti Project and eight more contracts under successive World Bank projects. It is currently preparing the first design and build contract to be financed with its own budget. Although some of these contracts faced issues during implementation, the issues were unrelated to their innovative features. The road department implemented the first performance-based rehabilitation and maintenance contract in the Kakheti region under the second SLRP.⁷ As expected, this experience had challenges, and it provided rich lessons (see section 3). However, IEG observed great enthusiasm among road department staff for the approach, and a second contract (to be financed with World Bank resources) is currently under preparation. The road department also asked the Asian Development Bank to finance performance-based contracts. Road department management expressed its satisfaction with the performance-based contracting model and an interest in applying it to locally financed road works. The two contractors that IEG interviewed were also very positive about their experience with the new contracting modalities.

2.10 IEG's rough attempt to quantitatively assess the benefits of design and build contracts in the Georgian context confirmed savings in time but not in cost.⁸ IEG compared three recently completed design and build contracts with four recently completed traditional maintenance contracts of similar length.⁹ This showed that the original average implementation period per kilometer for the design build contracts was 8 percent shorter than that for traditional contracts, even though design and build contracts include the design phase. The actual average implementation period for the design and build contracts was 3 percent shorter. The actual average price per kilometer of design and build contracts was 16 percent higher than the price of traditional contracts, which might correspond to the design's cost. The differences between the cost estimate, the original contract price, and the actual contract price per kilometer for both contract types were similar.

2.11 The quality of the road financed through the first design and build contract under the Kakheti Project is good. During the field visit to this road, IEG was surprised to find concrete pavement because concrete roads generally last longer and require limited maintenance, but they are uncommon for low-volume secondary roads, given

their cost. Road department staff clarified that the contractor used concrete instead of asphalt because this material was less expensive for them, being a subcontractor in a concrete highway project. If the design had not been the contractor's responsibility, the road would have been rehabilitated with asphalt. IEG found that the pavement was in good condition.¹⁰

2.12 IEG's qualitative assessment of the design and build contracts revealed additional benefits. According to World Bank staff, the benefits of the design and build approach in Georgia included a reduction in the road departments' contract management and supervision efforts at a time when they were highly involved in the East-West Highway construction. World Bank staff also commented that mostly different contractors won the design and build contracts and the performance-based contract, which exposed many contractors to output-based contracting and prepared the industry for this new experience. The contractor of one of the design and build contracts remarked that for them, this modality avoided bureaucracy related to design changes during work implementation and therefore reduced the contract duration. Road department staff appreciated the reduction in bureaucracy and mentioned the occurrence of fewer contract modifications and timely contract completion as potential benefits (the latter was not the case for the sample that IEG reviewed).

2.13 Regarding the benefits of the first performance-based rehabilitation and maintenance contract in Georgia, both road department and World Bank staff noted the higher quality of the road rehabilitation and the enhanced maintenance compared with traditional contracts. They emphasized that all necessary maintenance works were being carried out regularly, including work on shoulders, drainage systems, and road safety furniture. Based on this, road department staff expected the road to last longer and therefore to achieve savings in life cycle costs. In addition, the satisfaction of road users with the roads under the performance-based rehabilitation and maintenance contract in the Kakheti region significantly improved. Based on the road department's survey on road users' satisfaction, in 2015, 25 percent of respondents were satisfied with the Kakheti roads. The satisfaction increased to 75 percent in 2018. In the control area, in 2015, 20 percent of the respondents were satisfied. This increased to 45 percent in 2018.

2.14 Regarding costs, a comparison between the performance-based rehabilitation and maintenance contract and traditional contracts showed that the rehabilitation component of the performance-based contract was 11 percent higher than the average cost of nine recently awarded rehabilitation contracts.^{11, 12} The cost difference might be explained by the fact that the performance-based rehabilitation and maintenance contract includes the cost of surveys and the detailed designs; sidewalks, and covered drains in villages were included in its scope; the contractor had a higher risk perception because of payment on performance; there was a perceived risk associated with higher

donor safeguard requirements; and the compared contracts were of a different nature. The maintenance cost under the performance-based contract was 12 percent higher than the road department's average maintenance cost, but there is a wide variation in maintenance costs under traditional contracts, and costs between the two contracting modalities might not be fully comparable.¹³

2.15 Georgia experienced a cultural transformation in road safety in the past decade, and stakeholders credited the World Bank for its support. During IEG's field visits to more than 20 road sections, the team observed huge differences in road safety features between older roads and roads that were rehabilitated more recently. Older roads generally had only a few speed bumps close to urbanized areas and limited vertical signs, whereas newer roads normally had good horizontal and vertical signage, guardrails, bollards, and turns with adequate signage. IEG also noticed that the temporary road safety signage and measures were of high quality.

2.16 Other factors provide evidence of this cultural shift. First, the country has a road safety strategy (prepared in 2016 with World Bank support) and issues annual action plans, with which it largely complies. Road safety legislation has been established, and critical laws on seat belt use were issued in 2010 and on merit points deductions for driver licenses in 2016. Georgia also constantly improved its accident database, even though several interviewees considered it still inadequate for road accident analysis.

2.17 Second, the road department has been continuously improving its road safety practices and currently treats all works identically in terms of road safety, regardless of the financing source. The road department's nucleus in charge of road safety was elevated from a unit to a division, increasing the staff to six. They carried out 150 road safety audits in 2018 and, with World Bank support, have just started with the International Road Assessment Programme, which aims at significantly reducing road casualties by improving the safety of road infrastructure.

2.18 Third, enforcement has improved in recent years, mainly through the widespread use of cameras. IEG reviewed the available statistics on traffic fines, which showed that the number of fines issued through cameras between 2017 and 2018 increased by nearly 300 percent in both numbers and fine amounts. Under the assumption that the fines issued in the first two quarters of 2019 will stay the same during the second two quarters, the number of fines will increase by 137 percent and the fine amount by 156 percent compared with 2018. Under the same assumption, the number of fines issued by police officers will increase by 142 percent compared with 2018.

2.19 However, during the field visits, IEG also observed that despite the numerous cameras deployed (especially on highways), speeding was still an issue. The IEG mission attempted to drive at the given speed limit (though speed limits were not always clear) and recorded the number of cars that passed at higher speeds. The width of the secondary roads visited was generally six meters, and the general speed limit is relatively high (90 kilometers per hour). Therefore, overtaking was relatively rare. On highways, overtaking took place on seven of the eight sections visited (the eighth section was very short and had heavy traffic). In this context, it is worth noting that vehicles in Georgia may drive up to 15 kilometers per hour above the speed limit without being fined, supposedly because of the inaccuracy of speedometers in old cars. In addition, IEG's local driver and consultant were unsure of the actual speed limits on different types of roads. This signals an important shortcoming in road signage and in the people's awareness.

2.20 Fourth, the number of road deaths per 100,000 people went from a five-year average of 18.62 between 2005 and 2009 to 14.34 for the 2014 to 2019 period. This is still significantly higher than the high-income country average of 8.7 in 2015 (OECD 2016).

2.21 The World Bank's insistence and continuous engagement on road safety under the projects subject to this assessment and previous and subsequent projects contributed to this cultural shift. According to road department staff and members of civil society, in mid-2000, the country had no idea what road safety meant. These interviewees and staff from other ministries indicated that the alarming road fatality rates and the fact that the World Bank and other international financial institutions consistently insisted on including road safety activities in their projects and supported the country through advice and technical assistance helped them realize the urgency of the need for action. World Bank staff also mentioned that the holistic road safety approach under the Kakheti Project, which connected the different road safety stakeholders, and the continuation of the dialogue through successive projects enabled the World Bank to engage with most stakeholders in road safety and push the agenda.

2.22 The road department has been regularly using the road asset management system set up with World Bank support to improve road rehabilitation and maintenance planning for a decade. After a failed attempt to develop a road asset management system—a consulting firm had customized one, but it was complex and impractical—the road department and the World Bank team decided to drop these efforts in the late 2000s and set up a simple system. The SLRP financed consulting services and the equipment to collect data for the system, such as the roughness measurement equipment, traffic counters, and GPSs for vehicles. Other World Bank projects financed additional consulting services and equipment. Initially, the road department only digitalized the road network. Subsequently, it collected data for international roads and

then for secondary roads. The system used commercial software only, but because no commercial software has all the necessary functions, the road department combined different software, such as the Highway Development and Management Model (HDM)-4, ARCNET, and ROMDAS.

2.23 The road department improved the road asset management system over time under successive World Bank projects. Such improvements included, for instance, the use of social indicators for road prioritization, new system functions to conduct the International Road Assessment Programme, and new laser equipment to assess the roughness for performance-based contracts.

2.24 The road department has used the system regularly to develop the five-year rolling plans and the annual programming for road rehabilitation and periodic maintenance. The system optimizes when and what type of rehabilitation and maintenance interventions are necessary and helps extend the road network's life based on an economic and life cycle perspective. The road department's final rehabilitation and periodic maintenance program draws mainly on inputs from the system together with detailed feedback from the maintenance department on specific road needs and requests from local authorities.

2.25 Using a road asset management system regularly for planning and budgeting in developing countries is an important achievement. A literature review and a brief informal survey that IEG conducted among World Bank transport staff showed that the World Bank and other international financial institutions supported the development of road asset management systems in many countries (ADB 2018; Harral, Smith, and Paterson 2011). Although the system development was frequently successful, these systems have often not been updated and used regularly for economically efficient planning and budgeting.

Design and Preparation

What Worked?

2.26 The successful use of the road asset management system in road planning in Georgia depends on the government's determination to improve its international and secondary road networks, but IEG believes that the system's design characteristics and the enthusiasm and dedication of the staff responsible for planning played a crucial role. The system was designed to be implemented gradually and kept simple and inexpensive. Interviews with road department staff showed that when they decided to drop a previous attempt to set up an asset management system, it was clear to them that the way forward was a simple, inexpensive, and gradually implemented system that

could be set up and managed with little support from outside the road department. The system's features that determined its success include the following:

- Gradual approach to system development. Data collection started on part of the network only, and the amount of data collected increased over time;
- Simplicity. The system was designed to provide the essential inputs for roads maintenance and rehabilitation planning only. The data collection was initially limited to the International Roughness Index, traffic, and road location data;
- Use of only commercial software. No system customization was expected to take place, but the road department developed a small program to create homogeneous sections because one did not exist in the market;
- In-house data collection. Data collection was automated from the beginning, and the road department acquired its own equipment. Road department staff directly collect road roughness and location data annually with no need for consultants. For data on traffic volumes, the road maintenance contractors install the road department's traffic recording equipment annually or biannually on the roads under their responsibility; and
- Overall low costs to operate the system. The system was designed to keep operating costs to a minimum. Once the system was operational, three to four people handled the data collection and the planning and programming exercise for a network of about 6,000 kilometers.

2.27 The system's characteristics and the project indicators helped ensure its survival and continued use. Road department staff explained that with the frequent management changes, the system's usefulness was sometimes questioned. In this context, the fact that the system was not expensive to operate helped them to ensure its continued use. In addition, World Bank projects' inclusion of indicators that required the system to generate the necessary data also helped.

2.28 IEG observed strong enthusiasm in the small, dedicated planning team and continuity in the support from an individual local consultant over more than a decade. These factors also might have contributed to the success of road planning.

What Didn't Work?

2.29 **Although Georgia's road safety culture has shifted, the projects' results do not support this finding, mainly because of design shortcomings.** Despite placing road safety high on the projects' agenda and the World Bank's contribution to the country's road safety transformation, the road safety results under both projects are meager.

Under the SLRP, a long time gap between the delivery of the police enforcement training and equipment prevented a link to the enforcement improvements in recent years. For the Kakheti Project (see appendix A, Efficacy section), the average number of road fatalities in the region increased by 8 percent in the 2014 to 2019 period compared with a 2010 baseline, whereas it declined by 22 percent for the whole country for the same period.¹⁴

2.30 Under the SLRP, the main shortcoming was the lack of a causal link between the road safety activities and the project's objective. In this case, the road safety activities were not reflected in the PDO, and the project did not have an indicator to measure the results of this subcomponent. Therefore, no information on the effectiveness of the respective activities was collected.

2.31 The design of the Kakheti Project had several weaknesses. First, it featured a comprehensive approach to road safety that included a road safety management plan for the Kakheti region, road safety audits for the existing and new road sections, low-cost engineering measures to improve road safety on these sections, police enforcement training, training of emergency services, and a road safety campaign. Although such a holistic approach to road safety was in line with best practice, it was too ambitious for a subcomponent in a small, regional road project with a limited budget (the allocation for this subcomponent and the subcomponent for the road department's institutional strengthening was \$1.925 million).

2.32 Second, the design failed in terms of project implementation arrangements because this holistic approach required the involvement of three different ministries and the police, which were not part of the project. Third, it was not possible to assess the project's results accurately because of M&E design shortcomings (see appendix A, Efficacy and Quality of M&E sections of the Kakheti Project).

2.33 The Kakheti Project's design weaknesses, especially the fact that the project activities might have been spread too thin, were reflected in implementation shortcomings. First, according to World Bank staff, the road safety subcomponent suffered delays at the start because the road department faced great pressure to deliver the road works. In addition, there were problems with the quality and timeliness of the road safety management plan, which was to provide the detailed designs for most project activities. Both signal a limited commitment to the subcomponent, possibly because of the lack of ownership and strong involvement of all necessary stakeholders.

2.34 Second, despite the World Bank team's strong efforts to reach out to all road safety-related stakeholders during missions, the project managed to establish a working relationship only with the Ministry of Internal Affairs and the police. The Ministry of

Education and the Ministry of Health were not actively involved in project implementation. This resulted in the emergency service training not being carried out and a one-point-in-time road safety campaign without continuity and possibly with limited impact. Third, although the police played an active role in the road safety audit and the campaign, the activity to enhance enforcement in the Kakheti region did not take place, even though lack of enforcement might have been the crucial factor in the failure of this subcomponent. Finally, the engineering solutions to improve road safety also had shortcomings (see the Efficacy section of the Kakheti Project in appendix A).

2.35 Design flaws also largely explain why the road department did not strengthen its capacity to promote community participation in road planning at the local level. The SLRP did not strengthen the road department's capacity to promote community participation in road planning at the local level. Under the SLRP, the road department, mainly through the regional offices, was expected to set up regional road management committees to address local needs in road planning and monitor local road works and maintenance activities, foster community participation in road planning at the local level, and build capacity in the road management committees to carry out community participation. The road department did not conduct these activities.

2.36 IEG believes that this happened mainly because the real need for this type of capacity strengthening is questionable for several reasons. First, the road department has a limited role in local roads—it is not and never was responsible for local roads. Contrary to what is mentioned in the 2009 additional financing project paper, the responsibility to manage local roads did not pass to local government in 2007 (responsibility has been with local governments since 1997).¹⁵ The road department rehabilitates local roads under the SLRP only occasionally or at the government's request. In such cases, local governments transfer the roads to the road department for rehabilitation, and the latter transfers them back to local governments when the rehabilitation is completed.

2.37 Second, for roads rehabilitated under the SLRP (which were mostly semiurban), their nature might explain why community participation at the local level was not essential. Community participation in road planning is generally used for rural roads that have mostly a social function of access for the rural population because that population knows which roads benefit them the most. For roads with higher traffic levels and a predominantly economic function, the road selection is normally done through a cost-benefit approach. This was the case for the project roads, and it is confirmed by the fact that contrary to the economic analysis at appraisal, local roads were treated in the same way as secondary roads by the end of the project (see the SLRP Efficiency section in appendix A).

2.38 Third, the road department staff (including from the regional offices) and management that IEG interviewed had never heard about road management committees, regional annual proposals for local road improvement, and local road programs prepared through a participatory process involving communities, which they were expected to facilitate under the SLRP. Similarly, road department and World Bank staff also did not know the project expectations related to community participation, and there is no reference to these topics in aide-mémoire.

2.39 Other design features might also explain why the road department did not conduct the activities to enhance its capacity to promote community participation. First, although the SLRP PAD contains a detailed description of the local-level community participation mechanism to be set up, it does not specify the project activities to set up and operationalize this mechanism. Second, because the road department is not responsible for managing local roads, it was not the appropriate entity to be in charge of setting up and operationalizing a community participation mechanism at the local level. Third, although the PAD notes that Georgia had a limited participatory culture, the project did not start with a pilot, did not flag the failure to set up the community participation mechanism as a potential risk, and did not devise mitigation measures. As one World Bank staff member said, “The failure of this component needs to be appreciated in the command and control structure of post-Soviet countries, and it was very aspirational.”

2.40 The project design did not adequately consider feedback from consultations with community members and regional representatives held during project preparation to assess their interest in community participation. In these consultations, some of the participants indicated that “the regional council can identify road priorities without community consultation since the council knows the road conditions very well.”

Implementation and Supervision

What Worked?

2.41 IEG did not assess in detail what worked in project implementation and supervision, but many of the results described would not have been possible without thorough implementation and adequate supervision.

What Didn't Work?

2.42 The project restructuring that replaced the subobjective of strengthening the road department's capacity to promote community participation with the subobjective of strengthening the capacity of local governments to manage their road networks in a cost-effective and sustainable manner had several shortcomings, which impeded its

achievement. Although there was (and still is) a real need to strengthen the local government's road management capacity (see the Efficacy section of the SLRP in appendix A), the way that the new project activities were conceived had serious shortcomings. First, the theory of change was not plausible because the subobjective was to be achieved only through the production of a local road management and maintenance resource manual and workshops for local governments on local roads management and maintenance. This design failed to acknowledge that cost-effective and sustainable local road management requires local governments with adequate financing resources, good planning data and tools, incentives to change their behavior, and people with the right experience and skills.

2.43 Second, as with the original subobjective and design, the road department did not have a formal role with local governments and roads, and local governments were not part of the project. Third, IEG believes that the road department did not own the new subobjective and the respective activities. Road department staff informed IEG that the World Bank team had recommended the change, and they hired a consultant to produce the manual and conduct the workshops because it was part of the project.

2.44 There were also shortcomings in the implementation of this subcomponent, especially linked to a one-time activity not sustained over time. The manual provided a comprehensive overview on road management, including covering everything from planning, procurement, and work execution to work monitoring. However, the manual, though interesting and useful, feels like a general textbook for engineering students. In addition, the capacity building activity consisted of a two-day workshop only, mainly to present the manual to local governments. There was no follow-up activity under the project or any practical support. Therefore, it is not surprising that IEG found that nobody in the local governments was aware of the manual or recalled the training.

2.45 The second SLRP did not include any discussion on local government capacity strengthening, even if the project rehabilitated local roads, which after the rehabilitation were to be transferred back to the local authorities for their management. The third SLRP again includes local government capacity building, but the planned activities are limited.

3. Lessons

3.1 It is impossible to implement a holistic road safety approach through a small, regional project without the formal involvement of key road safety stakeholders. In this case, not all road safety activities were implemented as planned, and the road safety subobjective was not achieved. In hindsight, this was mainly because of the small size of

the road safety activities, the project's regional nature, and, above all, the lack of inclusion of the key road safety stakeholders as project implementation agencies.

3.2 A sustained engagement on road safety over time can help transform the road safety culture in a country. The Georgian experience showed that, even if the road safety activities under both projects were not successful, the World Bank's insistence on road safety activities in all its road projects, the provision of capacity strengthening for the road agency, regular outreach to road safety stakeholders (including civil society), and support through technical assistance helped the country realize the urgency of the need for action and promoted the road safety agenda. However, the cultural shift related to road safety took time to materialize and depended on a sustained engagement over time.

3.3 Upgrading a road that is barely passable can make it less safe despite the implementation of road safety engineering measures. The road department carried out a road safety audit in the design phase, implemented road safety engineering measures, and organized a one-time road safety campaign. Nevertheless, the number of road fatalities increased. Because road improvements lend themselves to speeding, more than just normal road safety engineering measures are required to make a new road safe, including above all speed restrictions and their strict enforcement.

3.4 Measuring improved road safety resulting from project interventions requires a carefully designed approach. In Georgia, road safety improvements were measured through the difference in fatality numbers at two points of time in a specific region. This raised attribution issues. To avoid some shortcomings, the number of fatalities could have been weighted by the vehicle-kilometers driven, population, or any other relevant parameter for the region. The indicator could also have looked at annual weighted averages for several years instead of two points of time only. A control group for a similar region should have been established. Finally, instead of or in addition to measuring the number of fatalities in a region, indicators could have been devised to assess the impact of individual road safety measures to help improve such measures in the future.

3.5 The successful introduction of performance-based maintenance and rehabilitation contracts requires contractors to be aware of the paradigm shift such contracts imply to avoid work delays and financial losses. Before launching the first new contract, the road department organized a workshop for the construction industry and provided contractors with the opportunity to ask questions in the prebid meeting. This was not enough, and contractors had difficulty grasping the lump sum payment concept and shifting to the long-term planning perspective of "you invest today to save

tomorrow,” which this contract modality entails. It led to several missed performance targets, the need to redo works, and financial losses to the contractor.

¹ Georgia’s road network under the responsibility of the road department consists of 1,528 kilometers of international roads and 5,297 kilometers of secondary roads (source: www.georoad.ge). Local governments are responsible for about 15,000 kilometers of local roads.

¹ The road department carried out basic, routine maintenance through 24 contracts, 23 input-based, two-year contracts covering specific zones, and 1 five-year performance-based rehabilitation and maintenance contract, for which rehabilitation was completed. Road department management showed an interest to possibly move to more performance-based maintenance in the future.

² Maintaining roads in better condition results in economic savings to users and reductions in transport costs many times greater than the maintenance expenditures (Harral, Smith, and Paterson 2011b).

³ Periodic maintenance and rehabilitation are lumped together into the same expenditure item, and separate figures are not available.

⁴ For instance, the average expenditure on transport in Indonesia between 2007 and 2017 was 1.5 percent of its gross domestic product (GDP). This includes private sector and investment by state-owned companies (World Bank 2019).

⁵ A design and build contract combines the design and construction or rehabilitation of a road in a single contract, and payments are made on the basis of outputs or a lump sum (for example, a specified dollar amount per kilometers of road completed to a certain standard) and not on inputs (for example, the amount of gravel and asphalt used to rehabilitate a road). This was how the design and build contract worked in the Georgian context, where it was normally used for smaller rehabilitation works, and contracting out the road designs separately would not have been economical in those cases.

⁶ A performance-based rehabilitation and maintenance contract is a long-term contract, normally between 5 and 10 years, which combines initial road rehabilitation (including its design) with a period of routine maintenance. The rehabilitation and maintenance activities are generally both paid based on outputs or a lump sum (for example, kilometers of road rehabilitated or kilometers of road corresponding to a predetermined level of service each month during maintenance). The first performance-based rehabilitation and maintenance contract in Georgia covered a road network of 117 kilometers, including the initial rehabilitation of 37.5 kilometers, followed by maintenance and the maintenance only of 79.5 kilometers. The contract’s duration is five years, and payments for both the rehabilitation and maintenance works were based on outputs or performance.

⁷ The first Secondary and Local Roads Project (SLRP) was followed by a second and third SLRP. The second SLRP closed in June 2019, and the third is ongoing.

⁸ The main benefits associated with design and build contracts include better rehabilitation and maintenance work quality (because the contractor is financially liable for defects during the full contract period), more consistent levels of road service, less corruption (because of fewer financial transactions), better focus on innovation and sharing risks, fewer contract modifications and cost overruns, and lower life cycle costs (Lancelot 2010; Gericke, Henning, and Greenwood 2014; World Bank 2016).

⁹ Comparing road work contracts is difficult, mainly because road designs may vary significantly and therefore may have very different costs and implementation time requirements.

¹⁰ IEG visited this road when it already started to get dark, therefore defects might not have been detected.

¹¹ Sobieniak, Janusz. 2018. "Georgia: Output and Performance-Based Contracting Experience, Unpublished Draft Report." World Bank, Washington, DC.

¹² Again, any cost comparison between different roadwork contracts is difficult. In addition, performance-based maintenance and rehabilitation contracts and traditional input-based contracts are very different in terms of risk allocation, and therefore the results of their comparison need to be interpreted with caution.

¹³ Maintenance costs might not be comparable because the performance-based contract covers clearing the maintenance backlog and maintaining the road to specified service levels or facing payment reductions; the road department's costs for traditional maintenance are based on norms, and the scope of the maintenance works may not be comparable to the service level of the performance-based contract; and the road department's traditional maintenance costs are measured by quantities, and there is no risk associated with not achieving the performance standards.

¹⁴ On the methodological side, the comparison in fatalities between the Kakheti region and Georgia as a whole is in absolute numbers and does not consider possible differences in the amount of vehicle-kilometers driven in the two areas because these data were not available for the country overall. If higher GDP per capita is taken as a proxy for higher vehicle ownership and use, the Kakheti region (with a GDP per capita of GEL 5,819 in 2017), however, fares even worse because the national per capita GDP is much higher (GEL 10,166). In addition, because of data limitations, a one-point-in time baseline is compared with the average of the past five years. These one-point-in-time data could be outliers.

¹⁵ Article 7 of the 1997 Law on Local Self-Governments states that "the repair, reconstruction, and construction of road of internal use of municipalities" is a function of local government. Article 16 of the 2005 Law on Local Self-Governments, in force since the beginning of 2006, reiterates local governments' responsibility for roads by specifying that "the maintenance, construction, and enhanced development of local roads" is a function of local government. Finally, the 2014 Law on Local Self-Governments specifies that "the management of local roads and of the traffic on these roads" is a function of local government.

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Appendix A. Ratings

Georgia Secondary and Local Roads Project (P086277)

Table A.1. Georgia Secondary and Local Roads Project (P086277)

Indicator	ICR*	ICR Review*	PPAR
Outcome	Satisfactory	Moderately satisfactory	Moderately satisfactory
Risk to development outcome	Negligible to low	Moderate	Moderate
Bank performance	Satisfactory	Satisfactory	Moderately satisfactory
Borrower performance	Satisfactory	Satisfactory	Satisfactory

Note: The Implementation Completion and Results Report (ICR) is a self-evaluation by the responsible Global Practice. The ICR Review is an intermediate Independent Evaluation Group product that seeks to independently validate the findings of the ICR. PPAR = Project Performance Assessment Report.

1. Relevance of Objectives and Design

Objectives

The original project development objective (PDO) was to “(i) upgrade and rehabilitate secondary and local roads networks and (ii) strengthen the road department of the Ministry of Infrastructure and Development’s capacity to promote community participation in road management and manage road networks in a cost effective and sustainable manner.” The revised PDO was to “(i) upgrade and rehabilitate the secondary and local roads networks and (ii) increase the roads department of the Ministry of Regional Development and Infrastructures’ and local governments’ capacity to manage the road network in a cost effective and sustainable manner.”

For the purpose of this assessment, the revised subobjective 2 is split into two subobjectives because it refers to different agencies, that is, the road department and local governments.

The change in the second subobjective of the PDO, introduced in 2009, constitutes a material change to the project and warrants a split rating in the assessment of the outcomes. The 2006 level 2 restructuring significantly decreased the outputs in terms of roads to be rehabilitated and lowered the project’s level of ambition. However, no additional split rating is proposed for this project change because the revised indicators corrected a design shortcoming and reflected the reality in the field more adequately. In addition, the restructuring was early in the process when only 5.5 percent of the credit was disbursed.

Relevance of Objectives

At appraisal, 40 percent of Georgia's population lived in rural areas, where extreme poverty often exceeded 30 percent. Infrastructure in general had degraded after the Soviet era because of a lack of spending. Secondary and local roads, which provided access to rural areas, were especially in bad condition: 61 percent of the 3,392 kilometers of secondary roads were in poor condition, and most of the 15,429 kilometers of local roads were in very poor condition. The road department needed to be transformed from a Soviet-type central structure to one that would be more responsive to local needs and the demands of a market economy. By the end of the project in 2012, poverty in Georgia decreased to 22.4 percent, and rural poverty decreased to 28.1 percent.¹ Secondary and especially local roads were still in inadequate condition and lacked maintenance (World Bank 2014).

Roads played an important role in Georgia's 2003 Economic Development and Poverty Reduction Program, which focused on rapid and sustainable economic growth and the reduction in extreme poverty. The fiscal year (FY)04–06 World Bank Country Assistance Strategy, among others, supported the objectives of attaining faster and more broad-based growth and improving governance and institutional capacity. Improving secondary roads in rural areas was considered a necessity.

The importance of secondary and local roads remained a focus in Georgia's FY10–13 Country Partnership Strategy (CPS). Under its strategic objective 2 (strengthening competitiveness for postcrisis growth) results area 4 (accelerate business growth), a key tool to support the rural economy was to improve the transport time, particularly in the agriculturally important Kakheti region.

In this context, the original subobjective 1 to “upgrade and rehabilitate secondary and local roads networks” was highly relevant. However, it was not framed in a sufficiently ambitious way because it aimed at “upgrading and rehabilitating roads” regardless of whether access was effectively enhanced and the local population and economy benefited from the roads. An intention to be more ambitious is evident from the outcome indicators, which include reductions in transport cost and time for rural communities. It is also evident from the first part of the PDO statement in the Project Appraisal Document (PAD), which differs from the legal agreement. This statement included a higher-level objective, that is, to improve the economic and social well-being of the rural population in selected areas through upgrading of their secondary and local networks. Such a higher-level objective would have been difficult to measure because of attribution issues, but the PDO could at least have been framed as in the second Secondary and Local Roads Project (SLRP), which aimed at “improving local connectivity and travel time for selected secondary and local roads.”

Regarding the original subobjective 2, to “strengthen the road department of the Ministry of Infrastructure and Development’s capacity to manage road networks in a cost effective and sustainable manner” was highly relevant. However, as seen in section 2 on “Design and Preparation: What Didn’t Work?” of the main document, there might not have been a real need to “strengthen the road department of the Ministry of Infrastructure and Development’s capacity to promote community participation in road management.” Therefore, because of the reduced level of ambition in the original subobjective 1 and a questionable need to strengthen the road department’s capacity to promote community participation, the relevance of original objectives is rated **modest**.

The revised subobjective 1 remained the same as the original subobjective 1. The revised subobjective 2 replaced “strengthening the road department of the Ministry of Infrastructure and Development’s capacity to promote community participation in road management” with “increasing the local governments’ capacity to manage the road network in a cost effective and sustainable manner.” This was highly relevant in light of the local governments’ responsibility for local roads and an increased focus on decentralization through the 2005 Law on Local Self-Governments, which reaffirmed that “maintenance, construction, and enhancement of local roads” were the responsibility of local governments. Because the reduced level of ambition of the revised subobjective 1 stayed the same as in the original subobjective 1, the relevance of the revised objectives is rated **substantial**.

Relevance of Design

Under the original design, the road rehabilitation works were expected to lead to improved road networks and reduced transport costs and times for rural communities (subobjective 1), and the road department’s institutional strengthening and capacity building were to contribute to improved road management and interaction with local communities (subobjective 2). However, this design had shortcomings.

First, as previously mentioned, the PDOs in the PAD and the loan agreement were not identical. Second, not all links in the results chain were fully logical. The activities for the traffic police were not captured in the outcomes and objectives. However, the outcomes of (i) increased road maintenance expenditures (which were essential to improve the sustainability of road sector management) and (ii) the publication of annual reports were not directly linked to any project activity. It could be argued that the project was to act as a platform to advocate increased road maintenance spending and more transparency, and that enhanced rehabilitation and maintenance planning and budgeting might have contributed to such outcomes, but the PAD did not document it. Third, largely as a result of these shortcomings, the monitoring and evaluation (M&E) framework was also

not fully consistent. Based on these factors, the relevance of original design is rated **modest**.

The revised project design scaled up the road rehabilitation activities, which were to contribute directly to the achievement of the first objective. It also included several new activities to strengthen the capacity of local governments. These local government–strengthening activities, together with the original activities to strengthen road sector institutions capacity, were expected to contribute to the achievement of the second objective. The revised design did not correct the shortcomings of the original design. In addition, as seen in paragraphs 2.41 and 2.43 of the main document, the design of the new activities also had weaknesses. Therefore, the relevance of the revised design is rated **modest**.

2. Efficacy

Original Objectives

Original Subobjective 1: Upgrade and Rehabilitate Secondary and Local Roads Networks

By project close, the project had rehabilitated 693 kilometers of secondary roads, exceeding the original target of 300 kilometers and reaching the revised target of 690 to 710 kilometers. Strictly speaking, this already evidences the achievement of the secondary road network upgrading and rehabilitation objective.

The secondary road rehabilitations under the project also contributed to decreasing the share of the secondary road network in bad condition from 61.0 percent at appraisal to 40.7 percent by project close, in line with the original target of 40.0 percent. In 2018, the percentage of secondary roads in poor condition declined further to 30.5 percent because of the increased budget allocations for road maintenance and rehabilitation referred to in section 2 on “Results” of the main document.

The Independent Evaluation Group (IEG) visited 14 of the 41 secondary road sections rehabilitated under the project. These sections were in good to fair condition and received basic pavement maintenance, and potholes were rare. However, this did not always include crack sealing, and IEG observed drainage, shoulder, and road signage and safety maintenance only for the roads with the heaviest traffic. A few of the roads also received periodic maintenance, whereas some of the older roads showed deformations mainly because of the heavy traffic and overloaded trucks.

The project also rehabilitated 211 kilometers of local roads, including 149 kilometers of local roads and 62 kilometers of project-rehabilitated secondary roads reclassified as

local roads. This exceeds both the original target of 200 kilometers and the revised target of 150 to 170 kilometers. Information on the condition of the local road network at appraisal, by project close, and at the time of the IEG mission was not available.

Of the two local project roads that IEG visited (out of eight), one had received periodic maintenance and was in perfect condition, whereas the condition of the other was fair to good, like most secondary roads visited.

Because more secondary and local roads were rehabilitated than envisioned at appraisal, the condition of the secondary network continued to improve, and the project roads were kept in fair to good condition, the efficacy of the original subobjective 1 is rated **substantial**.

Original Subobjective 2: Strengthen the Road Department of the Ministry of Infrastructure and Development’s Capacity to Promote Community Participation in Road Management and Manage Road Networks in a Cost-Effective and Sustainable Manner

As mentioned in section 2 on “Design and Preparation: What Didn’t Work?” of the main document, the road department did not strengthen its capacity to promote community participation in road management because it carried out planned project activities.

The project supported the road department in strengthening its capacity to manage road networks in a cost-effective manner for several reasons. First, the road department adopted new geometric design standards developed under the project. In these standards, the overall road width for all design options is narrower than in the previous standards. In addition, the standards use traffic volume and speed to determine the different geographic design options, whereas the previous standards were based only on traffic volume. This provides more flexibility to adapt different parts of a road with different terrain characteristics to different speeds and hence different design standards, therefore optimizing the road design and saving resources.

Second, as seen in section 2 on “Results” of the main document, the project activities helped successfully implement a road asset management system, which is used regularly to prepare the five-year rolling plans and annual programs for road rehabilitation and periodic maintenance.

Third, the project introduced the road department to new road works contracting modalities, which showed some of their benefits in the Georgian context (section 2 on “Results” of the main document).

Fourth, the two existing regional offices enable the road department to save travel costs and time. Staff in the Kutaisi regional office (about 250 kilometers away from the

headquarters in Tbilisi) noted that being in the regional office substantially reduces travel costs, saves time, and improves the quality of road work monitoring because they can go to the field more often, and it is easier to conduct surprise visits. According to the procurement plan, the project provided office furniture and computers to the regional offices, but because of the time that elapsed since the implementation of the SLRP, regional office staff in Kutaisi were not aware of it. The PAD had also envisioned the operationalization of four more regional offices, which did not happen. IEG believes that considering Georgia's size, three offices (the headquarters and two regional offices) might be enough because most parts of the country can be reached within about 150 kilometers from these offices.

As stated in section 2 on "Results" of the main document, the road department also enhanced the sustainability of road management by strongly increasing the allocations for road rehabilitation and maintenance, and the World Bank team likely contributed to it. The activity related to the original subobjective 2, not successfully implemented, was the adoption of the draft maintenance standard prepared under the project. Such standard would have contributed to a uniform level of maintenance in the country. World Bank staff informed IEG that approval of the standard had been a contentious issue because the road department did not want to be bound by a standard with which it would be difficult to comply, especially for local roads. Not all countries have maintenance standards. However, Georgia, which is trying to move toward more performance-based maintenance, would benefit from a maintenance standard customized to the national context.

Because the road department's capacity to manage roads cost-effectively and sustainably increased, but its capacity to promote community participation in road management was not strengthened, the efficacy of the original subobjective 2 is rated **modest**.

Overall, the efficacy in achieving the original objectives is rated **substantial**. Subobjective 1 was fully achieved, and subobjective 2 was achieved with moderate shortcomings.

Revised Objectives

Revised Subobjective 1: Upgrade and Rehabilitate the Secondary and Local Road Networks

The revised objective is identical to the original objective, and the respective outputs, outcomes, and assessment apply. In addition, with a 19.9 percent reduction in travel time on project roads by the end of the project, the outcome indicator target of 20 percent introduced with the 2009 restructuring and additional financing was achieved. The road department was unable to calculate the current travel speeds

because the baseline data for travel times on project roads were not available. However, the IEG mission traveled on all project roads it visited at the legal speed limits, which is often 90 kilometers per hour. This is substantially higher than the average travel speed of 50 kilometers per hour on the secondary project roads and 30 kilometers per hour on the local project roads by project close. For the reasons mentioned under the original subobjective 1 and because the travel time reductions were achieved, the efficacy of this subobjective is rated **substantial**.

Revised Subobjective 2: Increase the Roads Department of the Ministry of Regional Development and Infrastructure’s Capacity to Manage the Road Network in a Cost-Effective and Sustainable Manner

As mentioned under the original objective 2, the project helped enhance the road department’s capacity to manage the road network cost-effectively and sustainably with minor shortcomings. The 2009 restructuring and additional financing added one additional activity consisting of the preparation of a performance-based contract model. World Bank and road department staff did not recall if the model was prepared under this project or under a parallel World Bank project. However, road department staff credited the project for having introduced them to the concept of performance-based contracts. Even if there is no evidence that the draft contract model for performance-based contracts was prepared under this project, the original project activities contributed to the substantial achievement of this subobjective, and the efficacy is rated **substantial**.

Revised Subobjective 3: Increase the Local Governments’ Capacity to Manage the Road Network in a Cost Effective and Sustainable Manner

The road department hired a consultant to prepare a manual for local road management, and the consultant distributed the manual to local governments during a workshop organized to introduce it to them. However, IEG believes that the project did not enhance the capacity of local governments to manage their road network in a cost-effective and sustainable manner for several reasons.

IEG’s interviews with national and local government representatives suggested that the capacity of local governments to manage their local road network is weak. Most interviewees commented that the shortcomings are in human resources and budgets. In the two local governments that IEG visited, the infrastructure departments responsible for road management had 10 and 5 staff, respectively. The staff included engineers but no road engineers. In 2018, the 37 of the 69 local governments for which IEG received data spent GEL 5,859,891 on road maintenance. Assuming that their maintenance costs were identical to those of the road department for paved roads, this amount would

enable them to maintain 528 kilometers, or 6.6 percent of the local road network under their responsibility.²

IEG also found that mayors and staff of the infrastructure departments of the two local governments visited did not have a clear idea of the kilometers of roads under their responsibility, let alone the condition of the network. The inventory of local roads, prepared by the road department under this project at the recommendation of the World Bank and passed on to the local governments, is not used. In the two local governments, the infrastructure department staff was unaware of the existence of such inventory. The two local governments do not use optimization or prioritization support tools. Without good data and planning tools, the local government's road planning capacity is limited.³

The condition of local roads networks remains precarious. Even without road condition data, different sources of evidence point to the fact that local roads are not in good condition. Documents such as the PADs of more recent road projects in Georgia make this statement. Most of IEG's interviews with national and local governments' representatives and people met during the mission confirmed that local roads were mostly in bad condition, the situation was more problematic in mountainous areas and after rain, and routine maintenance of local roads was not adequate. Additionally, as mentioned previously, the local governments' maintenance spending is far too low to maintain the network. Furthermore, IEG's field visit of two local roads rehabilitated under the SLRP provided a mixed picture. One of the roads had recently received periodic maintenance and was in good condition, and the other road showed signs of past patching but had many open cracks and several small potholes.

Therefore, the achievement of this subobjective is rated **modest**.

Overall, the efficacy in achieving the revised objectives is rated **substantial**. The first subobjective was fully achieved, and the second was achieved with minor shortcomings. The third subobjective was not achieved because of design shortcomings, which are considered in the relevance of design rating.

3. Efficiency

Economic Analysis

At appraisal of the original project, a five-step approach was used to select the most efficient road sections to be financed under the project because traffic data were not available, traffic volumes were depressed because of extremely poor road conditions and a shrinking economy, and both the economic and poverty impacts needed to be considered. This was a diligent way of proceeding.

The first step started with an economic assessment using the Highway Design and Maintenance Model (HDM-4) and the Road Economic Decision model to identify the secondary roads for which the economic justification to rehabilitate them was the strongest. Twenty-two sections totaling 1,529 kilometers were assessed. The analysis relied on expert estimates for road condition and traffic data, cost data from existing road rehabilitation contracts, actual operating cost data, and conservative traffic growth estimates. The analysis used a discount rate of 12 percent, which is reasonable considering the data constraints.

In the second step, the development potential of the zone of influence of the 16 economically most justifiable secondary roads was assessed. Because of the lack of reliable data, the analysis used an expert opinion survey. Four experts rated each road on a scale of 1 to 10 for the agricultural potential and the opportunities for off-farm employment. A simple composite index was created as an indicator of the road's economic potential.

The third step was to assess the poverty impact of the 16 road sections. This assessment looked at the project beneficiaries per \$1,000 of investment and showed that the assessed roads benefited between 10 and 350 poor people per \$1,000 of investment.

In the fourth step, the results of the three assessments were combined to select the three secondary roads to be financed in the first year of project implementation. The net present values (NPVs) of these sections were \$2.8 million, \$2.1 million, and \$0.9 million. The overall NPV for the first-year program was \$5.8 million. The sensitivity analysis showed positive NPVs for all hypotheses tested. The economic internal rate of return (EIRR) was not calculated. This removes the possibility of assessing the robustness of the economic impact of the selected sections and comparing results over time.

The final step was to select the local roads in the influence area of the secondary roads to be rehabilitated.

When the additional financing was prepared, the economic analysis was repeated using HDM-4. The assessment looked at 377 kilometers of secondary and local roads for which data were available. A discount rate of 10 percent was used. All sections assessed showed an EIRR between 10 percent and 92 percent. The average EIRR was 30.7 percent, and the NPV was \$114.6 million for the roads to be improved under the additional financing. The additional financing project paper provides limited information on the analysis and the assumptions used. A cost effectiveness analysis was also carried out looking at the number of poor people in the influence area of the road section per \$1,000 investment. Because rehabilitation costs were substantially higher than anticipated at

appraisal of the original project, this analysis resulted in between 10 and 20 poor people per \$1,000 of investment.

At the 2010 restructuring, an economic analysis was carried out for the additional roads to be included under the project using the HDM-4 model. This analysis showed EIRRs ranging from 14.3 percent to 46.3 percent, depending on the sections. The restructuring paper does not include additional details.

At project completion, an ex post economic evaluation for the 49 road sections rehabilitated totaling 844 kilometers was carried out. The evaluation used the HDM-4, the evaluation period was 20 years, and the discount rate was 10 percent. The actual construction costs, current traffic, and an annual traffic growth rate of 2.8 percent were used. The overall EIRR was 24.7 percent, 30 percent lower than the overall estimated EIRR when additional financing was prepared. The main reasons for the lower actual rates of return were higher construction costs on some sections of the original project because of the adoption of higher construction standards than planned at appraisal, and lower traffic growth on some sections than projected because of the slowdown of the economy. The Implementation Completion and Results Report does not include information on the NPV.

Administrative and Operational Efficiency

Overall, the project had no significant cost and time overruns. The total estimated cost of the original project and the additional financing was \$127.44 million, and the actual total project cost was \$132.14 million. However, the cost of the initial civil works was higher than envisioned at appraisal because the original design assumed the adoption of a low-cost rehabilitation approach, which proved inadequate.

The planned project closing date was October 31, 2011, and the actual closing date was June 30, 2012. The original project had experienced delays because of the need to agree on the design standards for the roads and some initial procurement delays. At the midterm review, the project was again largely on track.

Overall, the project's funds were used efficiently. Even if the final EIRR was lower than expected at the time of the additional financing, an EIRR of 24.7 percent still indicates a robust economic return. The administrative efficiency had minor shortcomings. Therefore, the efficiency of the project is rated **substantial**.

4. Outcome

The project outcome against the original PDO is rated **moderately satisfactory**. Although the project objectives and the project design were moderately relevant, the objectives were substantially achieved, and the project funds were used efficiently.

The project outcome against the revised PDOs is rated **moderately satisfactory**. The revised PDOs were substantially relevant, but the relevance of the project design was modest. One of the project subobjectives was fully achieved, the other was achieved with minor shortcomings, and the third was not achieved because of design shortcomings. The project's funds were used efficiently.

The disbursement rate was 23.16 percent before the approval of the revised PDO and 76.84 percent after its approval. The weighted outcome of the project is **moderately satisfactory** (total weight 4.00).

5. Risk to Development Outcome

Local governments' road management capacity. The main risk to development outcome remains the local governments' capacity to manage local roads cost-effectively and sustainably. As stated in the Efficacy section, the local governments' road management capacity is weak. They do not collect road condition data, and their planning capacity is limited. The two local governments that IEG visited did not have a road engineer to review engineering designs for road works and monitor work implementation. The condition of the local roads network is precarious.

Road department's institutional capacity. The road department's capacity to manage the secondary network in a cost-effective and sustainable way is likely to be sustained. The institutional and capacity improvements started under the project have continued. Even if the road department currently has no plans to issue a maintenance standard, the planned broader use of performance-based contracts is likely to reveal a need for such a standard.

Road maintenance. The road department has an established practice of contracting out all roads for routine maintenance, but the quality of maintenance is not uniform (see section 2 on "Results" of the main document). The road department is also eager to experiment with new and more efficient road maintenance delivery approaches. The budget allocations for road rehabilitation and maintenance have steadily increased, and the network condition has improved. Therefore, the risk that maintenance on the project roads will be neglected is low.

Based on these factors, the overall risk to development outcome is rated **moderate**.

6. Bank Performance

Quality at Entry

The World Bank team conducted a thorough analysis of the transport sector challenges in Georgia, which focused strongly on road maintenance funding. The team selected a comprehensive project scope that included both secondary and local roads. This was important for the development of the rural economy and providing access to services. The team also struck a good balance between physical investments and institutional strengthening and selected the project roads based on careful consideration of both economic and social impacts. In a diligent five-step road selection approach, the team first identified the secondary roads and then the local roads in their area of influence to optimize connectivity.

The team considered the lessons from previous projects. They adequately assessed the project's environmental and social implications and prepared the necessary documents. They did not prepare a resettlement management framework because the project was designed to avoid land acquisitions. In hindsight, this was a shortcoming because the project required minor land acquisitions. The World Bank team also handled the project's fiduciary aspects adequately at appraisal.

The low-cost rehabilitation approach that the World Bank proposed to cover more kilometers of roads with the available funds did not have enough buy-in from the road department. Once the road department had access to increased resources for rehabilitation and maintenance, the project had to be restructured to apply more robust rehabilitation solutions and reduce the quantity of roads to be rehabilitated.

The World Bank team correctly flagged the risks of inadequate resources for maintenance and counterpart funds, lack of sustainability of the institutional development activities and possible resistance, and too-high expectations from community members. The risk mitigation measures, however, were weak.

Design weaknesses already mentioned in previous sections relate to the differences in the PDO statements in the PAD and the loan agreement, the output-oriented nature of subjective 1, and the flaws in the results framework. In addition, as noted in section 2 on Design and Preparation: What Didn't Work and Implementation and Supervision: What Didn't Work? of the main report, the community participation and local government capacity strengthening activities suffered from design shortcomings. Even though, in hindsight, the project design could have been improved under several aspects, IEG considers the design shortcomings as moderate at the margin. Therefore, Bank performance at entry is rated **moderately satisfactory**.

Quality of Supervision

The World Bank team was present in the country more often than usual for projects led mostly from Washington, DC, because they managed several projects in Georgia. The World Bank team provided guidance and recommendations during project implementation. Road management staff mentioned several times to IEG that they tried new measures at the World Bank team's recommendation. The World Bank monitored the road maintenance expenditures and paid adequate attention to capacity building and technical assistance activities. However, the available aide-mémoire do not show that the World Bank team discussed the activities related to community participation.

The World Bank team adequately supervised fiduciary and safeguards issues and provided strong hands-on support on environmental issues. The team was responsive and proactive and restructured the project four times. The restructurings were justified, but local government capacity strengthening activities would have deserved more attention. IEG confirmed that when the project was not led by a road engineer, a road engineer was part of the team. However, the team did not comprehensively change the results framework to correct its shortcomings. Based on these factors, Bank performance at supervision is rated **satisfactory**.

Overall, Bank performance is rated **moderately satisfactory**.

7. Borrower Performance

Government Performance

The government showed strong commitment to the improvement of secondary roads by substantially increasing road rehabilitation and maintenance budgets over time and providing sustainability to most institutional and capacity enhancements in the road department. Although the government has been providing additional resources to local governments for local roads improvements through the subsequent SLRPs and the regional development fund, not enough effort has yet been made to enhance the local governments' capacity to manage their roads. Because this shortcoming relates to only one aspect of the overall government efforts, the government performance is rated **satisfactory**.

Implementing Agency Performance

The road department conducted project implementation with the support of the Transport Reform and Rehabilitation Center. The road department completed the secondary and local roads improvements generally within time and budget. According to the aide-mémoire, the quality of road works had shortcomings partly attributed to inadequate supervision by the supervision consultant and infrequent monitoring by the

road department. Toward the end of the project, the road department's capacity was particularly stretched because of an increased number of contracts to be managed. In addition, the road department had lost several key staff. The road department subsequently hired new staff and replaced others, which left it with adequate capacity.

Road department staff and management were open to many World Bank recommendations, such as to conduct a study on road maintenance (including performance-based contracting), to create a cost monitoring system, and to establish a local road inventory.

The road department did not take steps to strengthen its capacity to promote community participation, but as noted in section 2 on "Design and Preparation: What Didn't Work?" of the main document, this might have been too aspirational given the long tradition of Soviet-era command-and-control practices and the lack of a real need.

The implementation agencies handled financial management and procurement adequately. The safeguards compliance had shortcomings, mostly in environmental management at project sites, reporting, and an unexpected need for minor land acquisitions. The road department corrected the issues by the end of the project. Because the shortcomings were minor, the implementation agency's performance is rated **satisfactory**.

Overall, the borrower performance is rated **satisfactory**.

8. Quality of Monitoring and Evaluation

Design

The Transport Reform and Rehabilitation Center oversaw M&E, especially relating to the institutional reforms and technical assistance. At the local level, the regional offices of the road department and the road maintenance committees were to monitor the road works and evaluate project outcomes. Because the road maintenance committees were not established, the two regional offices and the road department's headquarters staff carried out the monitoring of roadworks.

The design of the original and revised M&E frameworks had shortcomings. Partially because the PDO statements in the PAD and the loan agreement were not identical, there was a mismatch between indicators and project outcomes, and indicators such as the increased access to off-farm employment were not relevant to assess the PDO as stated in the loan agreement. In addition, some of the indicators did not have baselines and end targets.

Not all project outcomes had adequate indicators to measure them. For instance, there were no outcome indicators to measure the enhanced community participation capacity of the road department, the improved road management capacity of the local governments, and the outcome of the road safety activity with the police. The latter was also not reflected in the PDO statement.

The original outcome indicators were mostly output oriented and had a weak link to the project activities, whereas some indicators that measured the results of components were better suited to assess the achievement of the PDO. Moreover, the indicator measuring the percentage of main roads in poor condition was not related to the project activities because the project did not intervene on main roads. It was also not measured by the end of the project.

The indicators that measured the reduction in road rehabilitation unit costs were not adequate to measure the enhanced efficiency in road management because this unit cost depended on factors outside of the project's control, such as the increase in the cost of construction materials, the design standards, and the level of competition in the country. A better indicator to measure the cost effectiveness of the road department's sector management, to be generated mainly through improved planning and standards for road works, could have been the reduction in the need for rehabilitation and reconstruction works on the network because of enhanced standards and more regular maintenance. In addition, the targets for these indicators were underestimated.

The changes to the M&E framework introduced with the additional financing and restructurings consisted mainly of deleting indicators and adding a few new ones, which also had shortcomings. For example, the indicator that measured the number of person-months of jobs created was not linked to the PDO statement, and the indicator related to the reduction in vehicle operating costs had no baseline and therefore was not monitored. Finally, there were no protocols to measure the original and revised indicators.

Implementation

The road department collected the data and information on the indicators and included them in the regular project progress reports.

Utilization

The road department and the World Bank used the M&E information mainly as a tool to monitor and evaluate the progress of project implementation, as evidenced by the citation of M&E information in the aide-mémoire and Implementation Status and Results Reports. They also used the M&E data to adjust the scope of the planned road

rehabilitation to reflect the changes in the rehabilitation approach and increase the government's financing contribution.

Mainly because of the shortcomings in the M&E design, M&E is rated **modest**.

Kakheti Regional Roads Improvement Project (P117152)

Table A.2. Kakheti Regional Roads Improvement Project (P117152)

Indicator	ICR*	ICR Review*	PPAR
Outcome	Satisfactory	Satisfactory	Satisfactory
Risk to development outcome	Modest	Modest	Modest
Bank performance	Moderately satisfactory	Moderately satisfactory	Moderately satisfactory
Borrower performance	Satisfactory	Satisfactory	Satisfactory

Note: The Implementation Completion and Results Report (ICR) is a self-evaluation by the responsible Global Practice. The ICR Review is an intermediate Independent Evaluation Group product that seeks to independently validate the findings of the ICR. PPAR = Project Performance Assessment Report.

1. Relevance of Objectives and Design

Objectives

The PDO was to “reduce transport costs and improve access and traffic safety for the Kakheti regional roads.” The PDO was not revised, and the project’s level of ambition was not significantly changed, so no split rating is required.

Relevance of Objectives

At appraisal, Georgia had recently emerged from the August 2008 war with the Russian Federation, which, among other things, resulted in damage to infrastructure and the worsening of the infrastructure bottleneck. According to the 2008 road condition survey, 19 percent of main roads and 46 percent of secondary roads were in poor condition. Road safety was a growing concern, especially on newly rehabilitated or new roads because they enabled speeding. With 19 fatalities per 100,000 inhabitants in 2009, Georgia was significantly above European Union levels.

Agriculture was responsible for about 53 percent of the country’s employment but only for 10 percent of gross domestic product (GDP). In the Kakheti region, the two main economic pillars were agriculture (especially wine growing), and tourism. Agriculture was the main source of income, and tourism had a huge potential because of the region’s diverse climate and rich cultural heritage. However, the region’s economy had declined in previous years, and Kakheti was one of the poorest regions with a 46 percent poverty level. One reason was the decline in wine exports to the Russian Federation, Kakheti’s traditional market, and difficulties in opening new export markets because of high transport costs.

Therefore, the PDO of reducing transport costs and improving access and traffic safety for the Kakheti regional roads was highly relevant. This PDO was also fully in line with the country and World Bank strategies at appraisal.

To promote agricultural and rural development, Georgia's 2008–12 five-year economic development program, Georgia without Poverty, emphasized targeted infrastructure development. The government had also provided the high-level interministerial transport commission chaired by the prime minister with new functions to coordinate and lead road safety matters, and it prepared a national road safety strategy in 2008.

As mentioned under the Relevance of Objectives section of the SLRP, the World Bank's FY10–13 CPS referred to the improvement of the rural economy through transport time reductions, particularly in the Kakheti region. Under strategic objective 2 (strengthening competitiveness for postcrisis growth) results area 3 (upgrade the transport corridor and increase connectivity), the CPS also aimed at transport cost and time reductions along key transit roads and road safety improvements.

The PDO remained highly relevant and fully in line with the country and World Bank strategies by project close.

At that time, the secondary roads in poor condition had decreased to 35.1 percent, but the inadequate quality of the road network was still a burden to the economy in travel times and costs. Road deaths also continued to be stubbornly high, with 16 fatalities per 100,000 inhabitants.

Georgia's socioeconomic development strategy, Georgia 2020, identified the development of infrastructure and use of the country's transit potential as one of the main priority directions to achieve inclusive and sustainable economic growth. The Ministry of Regional Development and Infrastructure's 2014 Action Plan clearly indicated that regional development was the government's priority, including improvement of road and tourist infrastructure.

The FY14–17 CPS acknowledged that road rehabilitation and upgrading was a key government priority since 2004, and significant strides toward improving secondary roads had been made. The CPS also recognized that there was a need for further investments in local and secondary roads to address the transport needs of low-income populations. Improved domestic connectivity was expected to facilitate access to economic opportunities and promote inclusive growth in rural areas. The focus on road safety was in line with the regional and global priorities outlined in the United Nations' Decade of Action for Road Safety for 2011–20 and in the draft national road safety strategy for 2015–20. Based on these factors, the relevance of objectives is rated **high**.

Relevance of Design

The design approach was simple and straightforward before and after the restructuring. The results chain was clear, and the project activities could have reasonably been expected to achieve the desired outcomes and PDO impacts. The road rehabilitation works, better work supervision through a stronger regional road department office, and the use of a design and build contract were expected to lead to improved road conditions with shorter travel times and reduced vehicle operating costs. The savings in travel time and vehicle operating costs were expected to increase traffic, and hence provide enhanced access to more people. The holistic approach to road safety and the feasibility study for a city bypass were expected to improve road safety and reduce road fatalities. However, as mentioned in paragraphs 2.31 to 2.32 of the main document, this subcomponent had design weaknesses. Therefore, the relevance of design is rated **substantial**.

2. Efficacy

Outputs

The main project outputs included the following: (i) rehabilitation of 55 kilometers of the Vaziani-Gombori-Telavi road and 17 kilometers of the Sasadilo-Sioni road; (ii) workshop on the design and build contracting modality and implementation of the Sasadilo-Sioni road through such contract modality; (iii) training for road department staff and consultants on innovative bridge design and construction and performance-based road maintenance and rehabilitation contracts; (iv) preparation of a road safety management plan for the Kakheti region, which, among other things, proposed small-scale road safety interventions for the Vaziani-Gombori-Telavi and the Vaziani-Sagarejo-Bakurtskhe-Gurjaani-Telavi roads; (v) implementation of these interventions, including guardrails, signs, pedestrian crossings, speed bumps, safety island, channeled junctions, and fenced areas to restrict access to traffic during school hours; (vi) road safety campaign (box A.1); and (vii) 16 tablets for police officers operating in Kakheti to record road accident statistics.

Box A.1 Effectiveness of the Kakheti Road Safety Campaign

The road safety campaign carried out in Kakheti reached 70,120 people, including 4,007 schoolchildren at 21 local schools. The campaign focused on schools and aimed at children from 1 to 8 years old and students from 9 to 12 years old. It was completed by a media campaign and street actions to create awareness and was preceded by an assessment of the road safety obstacles (such as lack of speed bumps, pedestrian crossings, and lighting) and the improvement of the physical environment around schools. The activity with children and students consisted of one hour of classroom training on issues such as how to exit a bus and cross a road safely. It was followed by visibility training in the street to show the children and students how and when they are visible to drivers. The campaign lasted six months.

The campaign included a before-and-after assessment of the level of road safety awareness and showed improvements in road safety awareness in 60 percent of children and students. The organization that carried out the campaign informed IEG that according to information from the local school administration, no child has died near school zones where the project intervened since the campaign took place and that based on the reports of local people, fatalities around these schools had occurred before the campaign.

However, the effectiveness of this type of campaign is controversial. A Georgian road safety expert interviewed by IEG commented that the campaign, though important, was probably too regionally focused and too short to have had a strong impact. According to the World Bank's road safety specialist, awareness campaigns work only if they announce a change in enforcement and this change occurs. The literature on the topic is divided. An active learning-based educational intervention on street-crossing behaviors of seven-year-old children (Zare and others 2017), for instance, showed performance improvements, whereas the evaluation of the effectiveness of a video on children's road safety found no educational impact on either parents or children when used in a casual fashion (Zeedyk and Wallace 2003). Crucially, however, the parents believed it had an impact.

Source: Independent Evaluation Group and the cited literature.

3. Outcomes

Regarding the first subobjective of reducing transport costs for the Kakheti regional roads, by the end of the project, the road rehabilitations had reduced vehicle operating costs from \$0.36 to \$0.25 per vehicle-kilometer for cars and from \$1.05 to \$0.72 per vehicle-kilometer for trucks on the Vaziani-Gombori-Telavi road. This was exactly in line with the targets. The IEG mission was unable to obtain data on the current vehicle operating costs because the project end calculation was not available.

During the field visit, IEG observed that the pavement on this section had received basic maintenance and was in fair to good condition. Potholes were patched, and there were some localized new overlays. However, there were also many unsealed cracks, some rutting, and several pavement deformations at edges caused by small landslides. The International Roughness Index of the road in 2018 was 4.78, which confirms that the pavement had passed from the good category (between 0 and 4) to fair (between 4 and

6). Such worsening of the pavement condition is reasonable for a road located in mountainous terrain with a harsh winter climate and approaching a life of 10 years.

The traffic volume and travel time on the road have changed only modestly, and the road condition is still reasonable. Therefore, it is unlikely that the vehicle operating costs per vehicle-kilometer have changed significantly, and the achievement of this subobjective is rated **substantial**.

Regarding the subobjective of improving access for the Kakheti regional roads, in 2018, the travel time on the Vaziani-Gombori-Telavi road recorded by the road department using the four-wheel drive roughness measurement vehicle was 65 minutes. This is 18 percent higher than the target and project end value of 55 minutes. However, it still represents a 46 percent reduction from the baseline of 120 minutes. In addition, the travel time for cars, which made up 71 percent of the traffic in 2018, is most likely lower than the travel time of the roughness measurement vehicle.

The total traffic volume on the road has increased by 10 percent since the end of the project. In 2018, the average annual daily traffic on the project road included 3,072 cars (compared with a target of 2,100 and the project end value of 2,603), and 3,715 total vehicles (compared with a target of 2,800 and a project end value of 3,337). In this context, it is worth noting that the total annual number of visitors to Kakheti grew 4.7 times between 2010 and 2016, the highest growth among Georgian regions (World Bank 2018).

Although the travel time decreased compared with the project end, the larger traffic volumes show that more people benefit from improved access. Therefore, the subobjective of improving access is considered **substantial**.

Regarding the subobjective of improving traffic safety for the Kakheti regional roads, the number of fatalities on the Vaziani-Sagarejo-Bakurtskhe-Gurjaani-Telavi road was reduced by 45 percent from 29 in 2008 to 16 in 2018, even though the number of registered vehicles increased significantly.⁴ This exceeds the target of a 30 percent reduction in fatalities. However, the project indicator is not reflecting the reality in terms of road safety improvements in the Kakheti region for several reasons.

First, the project financed only minor road safety interventions, mainly junction improvements, on the Vaziani-Sagarejo-Bakurtskhe-Gurjaani-Telavi road in addition to the awareness campaign that covered the whole Kakheti region. Therefore, it is questionable that such a significant reduction was attributable to the project. IEG analyzed the fatality statistics available for two junctions with the largest investments under the project and found that there was no improvement in road accidents and deaths. For one section, the number of accidents increased from an average of 4.86 per

year before 2015 (the improvements took place in late 2014) to 5.50 per year between 2015 and 2018, and the average annual deaths decreased from 1 to 0.75 in the same period. For the other junction, the average annual number of accidents decreased from 5.43 to 3.25, whereas the average annual number of deaths increased from 1 to 1.5.

This is in line with IEG's field visit finding of the improved junctions, which were weak in terms of pedestrian safety. The improvements enhanced the safety and mobility of vehicles entering the junctions, but for several of them, the speed bumps announced on roads signs were not present, pedestrian crossings were limited, and lights or traffic lights were missing.

Second, the indicator does not take into account that the project's objective was to improving road safety for the Kakheti regional roads and not only on the Vaziani-Sagarejo-Bakurtskhe-Gurjaani-Telavi road, road safety interventions took place on both project roads, and with the rehabilitation of the Vaziani-Gombori-Telavi section (which previously was barely passable), some of the traffic switched from the Vaziani-Sagarejo-Bakurtskhe-Gurjaani-Telavi road because the former is much shorter, so it is necessary to consider the joint impact.

Third, by measuring fatalities in absolute numbers, the indicator does not account for the significant increase in traffic on both the Vaziani-Gombori-Telavi and Vaziani-Sagarejo-Bakurtskhe-Gurjaani-Telavi sections.⁵ The indicator also compared only two points in time, which could be outliers.

Consequently, IEG looked at the complete circle of roads from Vaziani-Sagarejo-Bakurtskhe-Gurjaani-Telavi-Gombori-Vaziani, which covers both road sections intervened under the project. IEG also weighted the number of fatalities by the vehicle-kilometers driven to account for the significant traffic increase. Finally, IEG compared the fatalities in 2010, when the rehabilitation of the Vaziani-Gombori-Telavi section was completed, with the annual weighted average fatalities for 2014 to 2018. This showed a 27 percent reduction in fatalities compared with the 2010 baseline.

Nevertheless, this still does not give the correct picture of the project's contribution to improve road safety in the Kakheti region because the number of traffic fatalities at the national level decreased significantly over the same time period, mainly because of new laws on seat belts in 2010 and the driver's license points system in 2016.⁶

Because it was not possible to obtain data on vehicle-kilometers driven at the national level for the period under evaluation, IEG compared the absolute number of fatalities nationwide in 2010 with the five-year average of fatalities between 2014 and 2018. This showed a reduction of 22 percent. IEG then compared the absolute number of fatalities on the two road sections in Kakheti in 2010 with the five-year average fatality rate from

2014 to 2018. This showed an increase in fatalities of 8 percent. If higher GDP per capita is taken as a proxy for higher vehicle ownership and use, the Kakheti region, with a GDP per capita of GEL 5,819 in 2017, would fare even worse because the national per capita GDP is much higher (GEL 10,166).

IEG was unable to explain the higher accidentality in the Kakheti region compared with the national level, but the following factors should be kept in mind:

- IEG found that from 2010 to 2018, more fatalities both in absolute numbers and per vehicle-kilometer driven took place on the Vaziani-Sagarejo-Bakurtskhe-Gurjaani-Telavi section than on the Vaziani-Gombori-Telavi section. The former is a main road in relatively flat terrain that lends itself to speeding and, as seen in section 2 on Results, speeding is an issue in Georgia. In addition, the project carried out only minor road safety improvements on this section, and these had limitations in terms of their effectiveness.
- The Vaziani-Gombori-Telavi section, rehabilitated under the World Bank project with a road safety angle in mind, is mostly in mountainous terrain and was hardly passable before 2010 and thus had no recorded fatalities. The rehabilitation of the road made travel on it quicker but less safe, which was to be expected. International evidence shows that each percent increase in speed generates an increase in deaths of about 4 percent and a slightly smaller increase in injuries (Nilsson 2004; Elvik, Christensen, and Amundsen 2004; Elvik 2009; Cameron and Elvik 2010). This can compound to huge increases in deaths. For instance, a change from a mean speed of 25 kilometers per hour to 50 kilometers per hour will increase deaths by 400 percent.
- IEG's field visit to the Vaziani-Gombori-Telavi section also showed that the road safety measures are insufficient. In addition, one minibus accident in 2016 caused nine fatalities on this section, therefore significantly increasing the average fatality rate in the past five years.

Considering that road deaths in absolute numbers decreased at the national level but increased in the Kakheti region, it is not possible to conclude that the project had a significant contribution to improved road safety in the Kakheti region, and the achievement of this subobjective is rated **modest**. This conclusion is supported by other IEG findings on the effectiveness of the road safety interventions carried out under the project (boxes A.1 and A.2).

Box A.2. Field Visit Findings on the Vaziani to Telavi Via the Gombori Pass Road

IEG's field visit showed that although the rehabilitated road from Vaziani to Telavi via the Gombori pass includes better road safety features than other roads improved in the same period, these features are not sufficient. The rehabilitated road incorporates road safety furniture, such as guardrails, bollards, speed limit signs, and speed bumps. This is an improvement compared with other rehabilitation works completed in the same period and visited by IEG. However, IEG's field visit also showed that additional road safety furniture would be desirable, including guardrails, signing of dangerous turns, and clearer speed limit signs. Road department staff indicated that if they had to rehabilitate the road now, they would improve the radius of certain turns, add more steel cable guardrails, and install lights in critical areas.

IEG also noticed that the maintenance of the road safety furniture had shortcomings. For instance, the cables of several guardrails were broken or not tightened, but a new guardrail was under construction in one area. Again, staff of the road department agreed that maintenance of road safety furniture and signage was inadequate in Georgia. Before the rehabilitation, this road had been barely passible, and no deadly accidents had been recorded. Therefore, it is not surprising that after the opening of the improved road in a mountainous area and where drivers are prone to speeding on certain small stretches, the number of fatalities increased from zero to a five-year average of 5.40 between 2014 and 2018.

Source: Independent Evaluation Group findings.

The project substantially achieved the subobjectives of reducing transport costs and improving access, but the evidence that the project improved road safety in the Kakheti region is insufficient, and this subobjective is rated **modest**. Overall, the project achieved its PDO with shortcomings related to road safety, and its efficacy is rated **barely substantial**.

4. Efficiency

Economic Analysis

A cost-benefit analysis was carried out at appraisal for the Vaziani-Gombori-Telavi section using the HDM-4 model and comparing it with and without project scenarios. The assumption used seemed reasonable. The discount rate was 12 percent. The economic analysis showed an EIRR of 51.8 percent and a NPV of \$132.2 million. The EIRRs in the sensitivity analysis were between 40.8 percent and 60.2 percent for all hypotheses tested.

In 2013, a cost-benefit analysis was carried out for the Sasadilo-Sioni section introduced with the project restructuring. The HDM-4 model and a discount rate of 12 percent were used. The assumptions were reasonable. The analysis showed an EIRR of 12.4 percent and an NPV of \$0.129 million. With a 20 percent cost increase, the sensitivity analysis

showed an EIRR of 10.2 percent, and with a 20 percent decrease in traffic, the EIRR was 11.5 percent.

At the end of the project, the cost-benefit analysis for both sections was repeated following the same methodology as at appraisal and restructuring. The ex post EIRR for the upgrading of the Vaziani-Gombori-Telavi section was 68.4 percent, which is higher than the ex ante EIRR of 51.8 percent. For the Sasadilo-Sioni road, the ex post EIRR was 21.3 percent, which is higher than the ex ante EIRR of 12.4 percent. In both cases, the EIRR was higher because of higher traffic volumes and lower upgrading costs compared with the appraisal estimates.

Administrative and Operational Efficiency

The project closing date was extended by 21 months because of the addition of the Sasadilo-Sioni section and delays in the road safety activities. The actual rehabilitation unit cost of \$0.4 million per kilometer to upgrade the Vaziani-Gombori-Telavi section was lower than the estimated \$0.5 million. For the Sasadilo-Sioni road, the actual unit cost per kilometer was \$0.27 million, which was 27 percent less than the estimated cost.

The project was carried out efficiently. The economic efficiency was high, and the administrative efficiency had minor shortcomings. Therefore, efficiency is rated **substantial**.

5. Outcome

The development objectives were highly relevant to the country's priorities. The relevance of design is rated **substantial**. The project helped reduce transport costs and improve access for the Kakheti regional roads to a substantial extent, but its contribution to improving traffic safety was modest. The objectives were achieved efficiently. Because the outcome was achieved with minor shortcomings, it is rated **satisfactory**.

6. Risk to Development Outcome

Road safety. Although the Georgian government has made significant progress in creating a road safety culture, as seen in section 2 on "Results" of the main document, there are still shortcomings in enforcement, which might be an important reason why Kakheti's roads are still unsafe. The road accidents database is also not yet adequate for reliable road accident analysis.

Road maintenance. For the reasons stated in the Risk to Development Outcome section of the SLRP, the risk that maintenance on the project roads might be neglected is rated **negligible to low**.

The overall risk to development outcome is rated **modest**.

7. Assessment of Bank Performance

Bank Performance

Quality at Entry

The World Bank team used this operation to support a region and a road that were high priorities for the country. The team devised a straightforward and logical project, and overall project preparation was adequate, but the design had shortcomings.

Fiduciary and safeguard arrangements were satisfactory. The implementation arrangements were simple and effective except for the road safety subcomponent, where a greater involvement of other key actors would have been desirable. The M&E design, although overall simple and logical, had weaknesses.

The team properly assessed and adequately addressed most project risks, but the risk mitigation measure to avoid an increase in road fatalities was inadequate. The team also missed risks related to the use of a holistic road safety subcomponent, which required the collaboration of all stakeholders in the area.

The technical assessment was generally sound, but the team underestimated the expected increase in traffic and was too conservative in recommending only a one-layer pavement for the second section of the Vaziani-Gombori-Telavi road. The pavement wore out quickly after the rehabilitation because of heavy traffic.

The team drew on the lessons from previous projects, particularly those related to technical road works and supervision and implementation arrangements. Although a holistic approach to road safety was in line with the lessons from previous projects, in hindsight it was not sufficiently incremental and measurable. Because project preparation overall was satisfactory and the shortcomings were mostly related to the road safety subcomponent, Bank performance at entry is rated **moderately satisfactory**.

Quality of Supervision

In addition to biannual supervision missions, the World Bank team carried out frequent video and audio conferences to advise and guide the road department in project implementation, particularly the road safety activities, which had difficulties at the start, and the design and build contract, which required enhanced support from the team. The team actively reached out to the different road safety actors during missions and managed to bring them closer. The team was proactive and restructured the project to use project savings and adapt it to the changed reality. The team took this opportunity

to pilot a new contracting approach and open the door for performance-based contracting. It also provided strong support on safeguards issues. Based on these factors, Bank performance at supervision is rated **satisfactory**.

Overall, Bank performance is rated **moderately satisfactory**.

Borrower Performance

Government Performance

Despite frequent government changes, the government was strongly committed to the road component of the project. It prepared the detailed designs and launched the bidding for the first 27 kilometers of the Vaziani-Gombori-Telavi road before project approval. The government was open to innovations in road sector management and provided counterpart funding without delays. However, it did not take a strong stance to bring all road safety stakeholders together. Based on these factors, the government performance is rated **satisfactory**.

Implementing Agency Performance

The high-level management of the road department changed several times during project implementation, but this did not cause major disruptions. The road department was efficient in filling vacant staff positions and provided the necessary training opportunities for its staff.

The road department completed the road works largely on time and within budget. It was open to innovative approaches in road management and worked actively to establish a relationship with the Ministry of Internal Affairs and the police to implement the road safety activities. IEG observed the enthusiasm with which the road department's road safety staff approached this subject.

The road department and the Transport Reform and Rehabilitation Center adequately handled the fiduciary aspects. There were issues related to environmental safeguards management during early project implementation, which the road department subsequently addressed. Based on these factors, the performance of the implementation agency is rated **satisfactory**.

Overall, the borrower performance is rated **satisfactory**.

8. Quality of Monitoring and Evaluation

Design

The road department was in charge of M&E with the support of the Transport Reform and Rehabilitation Center and under the supervision of the Ministry of Regional Development and Infrastructure. The M&E framework was simple and included outcome indicators adequately linked to each project subobjective. All indicators had baseline data and measurable targets set at appraisal. The data collection methods were specified. The outcome indicators consisted of reduction in travel time, vehicle operating costs, and road fatalities, and the increase in traffic volume, which are the indicators typically used in road projects.

This framework had shortcomings mainly related to the road safety indicator. First, a reduction in fatalities is the ultimate outcome expected from a holistic road safety approach, and an indicator that measures such reduction is highly adequate. However, measuring the reduction for the Vaziani-Sagarejo-Bakurtskhe-Gurjaani-Telavi road was not adequate only for the reasons noted in the Efficacy section. In addition, there should have been a control group to ensure that the reduction in fatalities was attributable to the project. In hindsight and considering that the holistic road safety approach was not fully implemented, the road safety indicator should also have been more conservative. It could have measured the outcomes of specific road safety interventions. For instance, indicators could have captured the reduction of fatalities in areas with specific interventions, such as junction improved, or the impact of the road safety campaign. This would have helped understand the impact of such measures and would have been a useful tool to improve them.

Second, it would have been preferable to use actual fatality figures in the baseline and target for the road fatalities indicator instead of or in addition to the percentage values to ensure that the data can be recalculated adequately by the end of the project.

Third, the intermediate indicator of number of person-months of jobs created was not logically linked to any project outcome. In addition, its definition assumed that an investment of \$3,000 created one person-month of jobs, which was not justified in the PAD.

Finally, although the World Bank team changed the output indicators with the 2013 restructuring, which introduced the new Sasadilo-Sioni section, they did not reflect this introduction in the outcome targets.

Implementation

The monitoring and evaluation subunit of the road department regularly collected and analyzed the M&E data. This information was included in the road department's regular progress reports and recorded in the Implementation Status and Results Reports.

Utilization

The road department and the World Bank used the M&E information mainly to monitor the progress in project implementation and toward the achievement of the PDO. However, the road department has been collecting data regularly on road conditions and traffic and has used it to inform its long-term and annual planning of rehabilitation and maintenance works. The road department has also been using the information on road fatalities to improve the road safety.

Because the M&E design overall was well done, the implementation and use were adequate, and the design shortcomings related mainly to the road safety indicator, M&E is rated **substantial**.

¹ This refers to relative poverty defined as lack of affordability of basic necessities, such as food and shelter. The share of population in absolute poverty, defined as households with an income less than 60 percent of average median income, was 30 percent. In rural areas, it was 35 percent.

² The Independent Evaluation Group (IEG) team's estimation of the percentage of local roads maintained assumes that each local government is responsible for an equal share of the local road network, therefore IEG divided the total network of 15,000 kilometer by the total number of local governments (69) and multiplied the result by 37. It is also necessary to note that a large part of the local road network consists of gravel roads, which are more expensive to maintain than paved roads, for which the road department spent, on average, GEL 11,100 per kilometer in 2018.

³ IEG also believes that the planning of road interventions is ad hoc, especially if not financed by the regional development funds. Based on the information from mayors, infrastructure department staff, and regional governors, the planning of local road interventions differs by source of funding. For investments with local governments' funds, the mayor and the municipal council make the investment decisions. Staff of one of the infrastructure departments visited informed IEG that they prepare an investment plan based on their knowledge of the road network, requests from people, or meetings with the community. They apply some criteria, such as the number of villages a road connects or its importance for tourism. For local road works financed through the regional development fund (which is the main financing mechanism for

constructing, rehabilitating, and paving local roads), a more rigorous prioritization approach is applied based on legally prescribed socioeconomic criteria.

⁴ For instance, between 2010 and 2018, the number of registered vehicles increased from 730,998 to 1,321,610 (81 percent). However, road department officials informed IEG that there are problems with the vehicle registration data capturing more vehicles than the actual number.

⁵ The annual average daily traffic on the two sections increased from 2,635 vehicles in 2010 to 6,279 vehicles in 2018 (138 percent).

⁶ The road fatality statistics for Georgia as a whole and for the two road sections, which received road safety improvements under the project, showed a significant drop in fatalities the year after these two laws were introduced.

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Appendix B. Fiduciary, Environmental, and Social Aspects

Georgia Secondary and Local Roads Project (P086277)

Financial Management

The Transport Reform and Rehabilitation Center was responsible for financial management under the project and overall carried out this function satisfactorily except for the late submission of some financial monitoring and audit reports and late payments. There were no reported ineligible expenditures or noncompliance with World Bank fiduciary policies. The last three Implementation Status and Results Reports (ISRs) rated the project's financial management performance as satisfactory.

Procurement

The road department handled procurement adequately under the project. No noncompliance with World Bank procurement policy and processes was identified. The last three ISRs rated the project's procurement performance satisfactory. The road department pointed out that contrary to what is mentioned in the Implementation Completion and Results Report, they did not decide to use the World Bank procurement methods for activities financed with government budget.

Environmental and Social Safeguards

The project was classified as category B for environmental assessment purposes because it involved only the rehabilitation of roads within the existing right of way, therefore the negative impacts were considered temporary and mitigatable. Only OP/BP4.01, Environmental Assessment, was triggered. The road department prepared an environmental management framework at appraisal and specific environmental management plans for each road work during project implementation. The environmental classification did not change with the additional financing, which expanded the scope of road works, because the nature of the works remained the same.

World Bank staff informed the Independent Evaluation Group that the road department overall complied with the World Bank's environmental policy throughout project implementation. However, the project had weaknesses in on-site environmental management, including insufficient temporary road safety signage and shortcomings in disposing of waste from road sites. The road department's environmental supervision and the quality of reporting were also weak. This road department's performance improved over time.

At appraisal, no land acquisition or resettlements were envisioned. OP 4.12, Involuntary Resettlement, was not triggered, and no resettlement framework was prepared. Minor land acquisitions had to take place during project implementation, caused by the need to realign a road section because of riverbank erosion. The World Bank's Involuntary Resettlement Policy was not triggered because of the small and one-time nature of the occurrence. The land acquisition was completed in line with World Bank safeguard requirements and was fully documented. Therefore, the last ISR rated the overall safeguard performance as satisfactory.

Kakheti Regional Roads Improvement Project (P117152)

Financial Management

The project's financial management arrangements were generally satisfactory and acceptable to the World Bank. The Transport Reform and Rehabilitation Center adequately handled financial management in compliance with financial reporting and audit covenants under the project. The Transport Reform and Rehabilitation Center submitted the interim unaudited financial reports and the financial audit reports on time, and these were unqualified and acceptable to the World Bank. The project had no major financial management issues. The last five ISRs rated the project's financial management performance as satisfactory.

Procurement

The road department carried out the procurement under the project, following the World Bank's procurement guidelines. The project had no unresolved procurement issues. The last five ISRs rated the project's procurement performance as satisfactory.

Environmental and Social Safeguards

The project was classified as category B for environmental assessment purposes because the road works were to take place within the existing right of way, and no significant or irreversible impacts were expected. However, the road works required some land acquisitions, mainly to realign the road. The following three safeguards policies were triggered: OP4.01 Environmental Assessment, OP 4.12 Involuntary Resettlement, and OP4.11 Physical Cultural Resources. The road department prepared an environmental impact assessment, which included an environmental management plan, a resettlement policy framework, and a resettlement plan for one road section.

At project appraisal, the World Bank assessed the road department's environmental management capacity as weak with a need for strengthening. In 2010, the road

department set up an environmental team, which two years later evolved into a full-fledged resettlement and environment unit.

The environmental safeguards performance under the project was generally satisfactory except for the early stages of project implementation because of poor management of excess material and borrowing sites, the absence of a dedicated environmental specialist in the supervision consultant's team, and weaknesses in on-site road safety management. The road department prepared a remedial action plan with the support of the World Bank team. The contractor implemented the plan, completing most of the landscaping, compacting works at the excess material disposal sites, and undertaking a large compensatory tree-planting program within the right of way.

During the implementation of the Sasadilo-Sioni section, the road department realized that this road had been erroneously included in the State Forest Fund. Addressing this error was urgent because the road department needed to cut some trees to meet standard engineering parameters and provide access for construction machinery, and this was not possible as long as the road was listed within the State Forest Fund. The road department successfully de-listed the road from the State Forest Fund, following national rules and procedures.

The road department satisfactorily implemented the two resettlement action plans and complied with the project's social safeguards requirements. The road department completed the land acquisition for the section between Vaziani and Gombori in 2010 and for the section between Gombori and Telavi in 2012. Because of design changes to minimize the impact on land acquisition, such as construction of concrete ditches in populated areas and concrete retaining walls, the land acquisition involved 31 land plots instead of the 174 expected at appraisal. The road department fully compensated all landowners in accordance with the provisions of the resettlement action plan and received no complaints.

The last five ISRs rated the project's environmental performance as satisfactory.

Appendix C. Basic Project Information

Country: Georgia

Project Name: Secondary and Local Roads Project

Project ID: P086277

Financing instrument: Investment Project Financing

Global Practice: Transport

Original World Bank financing commitment: special drawing rights (SDR) 13.8 million, equivalent to \$20 million

Revised World Bank financing commitment: SDR13.8 million and \$70 million, equivalent to \$90 million

Actual disbursement: \$90.69 million (higher than the revised commitment because of depreciation of the SDR)

Financial sources: International Bank for Reconstruction and Development: \$69.69 million and International Development Association: SDR 13.80 million, equivalent to \$21 million

Original expected total project cost: \$27.44 million

Revised expected total project cost: \$127.44 million

Actual project cost: \$131.10 million

Table B.1. Estimated and Actual Project Costs and Financing

Component or Financing	Original Appraisal Estimate (\$, millions)	AF Appraisal Estimate (\$, millions)	Actual Costs (\$, millions)	Percentage of AF Appraisal Estimate
Component				
Rehabilitation of secondary and local roads	22.54	117.54	122.86	105
Strengthening of road sector institutions	2.40	3.60	4.46	124
Designing and supervising road rehabilitation	2.50	6.30	4.78	76
Total	27.44	127.44	132.10	104
Financing				
IDA	20.00	20.00	21.00	105
IBRD	0.00	70.00	69.69	100
Borrower	7.14	37.14	41.42	112
Bilateral agencies (undefined)	0.30	0.30	0.00	0
Total	27.44	127.44	132.10	104

Source: Independent Evaluation Group elaboration.

Note: AF = additional financing; IBRD = International Bank for Reconstruction and Development; IDA = International Development Association.

Environmental assessment category: B

Table B.2. Project Dates

Milestones	Expected	Actual
Approval	n.a.	June 24, 2004
Effectiveness	n.a.	October 21, 2004
Restructuring	n.a.	December 27, 2006
Additional financing	n.a.	March 19, 2009
Restructuring	n.a.	February 25, 2010
Restructuring	n.a.	October 28, 2011
Midterm review	n.a.	November 3, 2006
Closing	October 31, 2009	June 30, 2012

Source: Independent Evaluation Group elaboration.

Note: n.a. = not applicable.

The project was restructured four times and had an additional financing. The first level 2 restructuring on December 27, 2006, reduced the scope of the rehabilitation works from 500 to 700 kilometers to 250 kilometers because of increased road deterioration, the use of higher standards than expected at appraisal, and road construction costs increases. It adjusted an outcome indicator and an output indicator accordingly.

The additional financing of \$70 million and second restructuring, approved by the World Bank Board of Directors on March 19, 2009, scaled up the project. It included 450 kilometers of additional rehabilitation works, 150 kilometers of road designs, and 450 kilometers of road works supervision; added several new capacity strengthening activities, especially for local governments; revised the second project development objective to reflect this responsibility transfer to the local authorities; revised the results framework to reflect the project changes and enhance measurability; and extended the closing date by 24 months, from October 31, 2009, to October 31, 2011, to implement the new activities.

The third level 2 restructuring on February 25, 2010, increased the kilometers of roads to be rehabilitated to approximately 840 to 880 and the kilometers of road designs to 840. It also changed the intermediate indicators accordingly. This was necessary to use project savings that resulted from lower bid prices.

The fourth level 2 restructuring on October 28, 2011, extended the closing date by seven months to July 31, 2012 (the project actually closed on June 30, 2012), to complete the road civil works.

Table B.3. Key Staff Responsible

Management	Appraisal	Completion
Project Team Leader	Olivier P. Le Ber	Joseph Melitauri
Sector Manager or Practice Manager	Motoo Konishi	Juan Gaviria
Sector Director or Global Practice Senior Director	n.a.	n.a.
Country Director	D-M Dowsett-Coirolo	Henry G. R. Kerali

Source: Independent Evaluation Group elaboration.

Note: n.a. = not available.

Country: Georgia

Project name: Kakheti Regional Roads Project

Project ID: P117152

Financing instrument: investment project financing

Global Practice: Transport

World Bank financing commitment: \$30 million

Actual disbursement: \$30 million

Financial source: International Bank for Reconstruction and Development

Expected total project cost: \$37.50 million

Actual project cost: \$36.47 million

Table B.4. Estimated and Actual Project Costs and Financing

Component or Financing	Appraisal Estimate (\$, millions)	Actual Costs (\$, millions)	Percentage of Appraisal Estimate
Component			
Improvement of the road linking Vaziani, Gombori, and Telavi	32.65	31.60	97
Road safety improvement and institutional strengthening	1.93	3.97	206
Project implementation	0.21	0.16	76
Contingencies	2.64	0.67	25
Front-end fee	0.08	0.08	100
Total	37.50	36.47	97
Financing			
IBRD	30.00	30.00	100
Borrower	7.50	6.47	86
Total	37.50	36.47	97

Source: Independent Evaluation Group elaboration.

Note: IBRD = International Bank for Reconstruction and Development.

Environmental assessment category: B

Table B.5. Project Dates

Milestones	Expected	Actual
Approval	n.a.	November 10, 2009
Effectiveness	n.a.	December 8, 2009
Restructuring	n.a.	November 20, 2013
Midterm review	n.a.	n.a.
Closing	November 30, 2013	August 30, 2015

Source: Independent Evaluation Group elaboration.

Note: n.a. = not applicable.

The November 20, 2013, restructuring added a new activity under component 1 to use project savings that occurred because of lower rehabilitation costs than expected. It also canceled one activity under component 2, which was no longer relevant, replacing it with two new activities. These changes are presented in section 2 on “Results” of the main document. Additionally, it extended the closing date by 21 months to August 30, 2015, to complete the new activities.

Table B.6. Key Staff Responsible

Management	Appraisal	Completion
Project Team Leader	George A. Banjo	Natalya Stankevich
Sector Manager or Practice Manager	Henry G. R. Kerali	Juan Gaviria
Sector Director or Global Practice Senior Director	n.a.	n.a.
Country Director	Asad Alam	Mercy Miyang Tembon

Note: n.a. = not applicable.

Appendix D. Methods and Evidence

This report is a Project Performance Assessment Report. This instrument and its methodology are described at <https://ieg.worldbankgroup.org/methodology/PPAR>.

Overview

The Independent Evaluation Group (IEG) based the assessment on evidence obtained through a review of the project documents of the two assessed projects; a review of project documents of previous and successive road projects in Georgia; interviews with World Bank staff, implementation agency staff and management, government counterparts, representatives of the local authorities, development partners active in the road sector, nongovernmental organizations, and civil works contractors (see table D.1 for a list of the people interviewed); literature reviews on specific topics and an informal survey of World Bank transport staff to triangulate findings; quantitative data on maintenance expenditure, road fatalities, and road conditions; and observations during field visits.

Sample Selection for Field Visits

IEG's field visits aimed at assessing the quality and condition of road sections rehabilitated under the two projects that are the subject of this Project Performance Assessment Report, the quality of road safety improvements under the Kakheti Project, if and how well the regional offices established and operationalized under the Secondary and Local Roads Project (SLRP) were functioning, the capacity of local governments to manage their road network, and whether speeding is a problem in Georgia.

Selection of Road Sections to be Visited

The Kakheti Project financed two roads, and IEG included both roads in the sample of roads to be visited.

The SLRP financed the rehabilitation of 49 road sections, of which 41 are secondary roads and 8 are local roads. These roads are mostly located in five areas or clusters within the country. IEG selected three of the clusters to optimize travel. Therefore, IEG selected the roads in the cluster in the Kakheti region to be able combine the visits under the Kakheti Project and the SLRP, the cluster between Tbilisi and Kutaisi, and the cluster around Kutaisi. Within the three clusters, IEG visited as many roads as possible during the allocated time for field visits. IEG also selected all local roads in the three clusters. This approach enabled IEG to visit 14 secondary and 2 local SLRP roads, which represented 34 percent of the secondary and 25 percent of the local SLRP roads.

Selection of Road Safety Interventions to be Visited

The Kakheti Project had nine larger road safety interventions at junctions. IEG selected the six that were closest to Tbilisi.

Selection of Regional Offices to be Visited

The SLRP was expected to establish and operationalize six regional offices, but only the offices of Batumi and Kutaisi existed at the time of this assessment. Therefore, IEG selected the Kutaisi office to optimize travel.

Selection of Local Governments to be Visited

IEG selected the local government responsible for the two local roads to be visited. IEG also selected the regional governments in the areas where the local roads to be visited are located.

Assessment of Speeding in Georgia

The IEG mission drove at the speed limit whenever possible and recorded all cars that passed the mission car on all roads traveled, including project and nonproject roads.

Main Evaluation Questions

The assessment focused on the following main evaluation questions:

- Have Georgia's secondary roads, including the project roads, been maintained or not, and is the maintenance model sustainable?
- Have Georgia's local roads, including the project roads, been maintained or not, and is the maintenance model sustainable?
- Has the road department's capacity to manage the secondary and local road networks in a cost-effective manner been improved through the project or not and why?
- Has the local government's capacity to manage the local road network in a cost-effective manner been improved through the project or not and why?
- Have the two World Bank projects contributed to enhance road safety in the country? How, and why?
- Was the introduction of the new contracting approaches in Georgia successful or not and why?

List of People Interviewed

Table C.1. List of People Interviewed

Name	Title	Organization
Abdulaziz Faghi	Program Leader	World Bank
Amali Rajapaksa	Senior Transport Specialist	World Bank
Aymen Ahmed Osman Ali	Senior Transport Specialist	World Bank
Bakar Babuchadia	n.a	Roads Department Kutaisi Office
Bakar Cheishvili	Head of Office	Roads Department Kutaisi Office
Besarion Bochorishvili	n.a	Orienti Ltd.
Dabid Cheishvili	n.a	Roads Department Kutaisi Office
Darejan Kapanadze	Senior Environmental Specialist	World Bank
Ekaterine Laliashvili	Chair of the Board	Georgia Alliance for Safe Roads
Erekle Kezherashvili	Deputy Head	Ministry of Economy and Sustainable Development
Giorgi Bujuanishvili	Economist	Shida Kartli Region
Giorgi Gelashvili	Specialist	Municipality of Khashuri
Giorgi Japaridze	Consultant	Roads Department of the Ministry of Regional Development and Infrastructure
Giorgi Kiziria	Senior Project Officer	Asian Development Bank
Giorgi Tabatadze	Deputy Head of Department for Relations with Regions and Local Self-Governance Bodies	Ministry of Regional Development and Infrastructure
Giorgi Tsereteli	Deputy Chairman	Roads Department of the Ministry of Regional Development and Infrastructure
Irakli Izoria	Director	Partnership for Road Safety
Irma Patsia	n.a.	Roads Department of the Ministry of Regional Development and Infrastructure
Joseph Melitauri	Senior Operations Officer	World Bank
Lala Kachlishvili	Head of Infrastructure	Municipality of Tianeti
Lasha Malkhazishvili	Head of Municipality	Municipality of Khashuri
Lika Merabishvili	Project Coordinator	Partnership for Road Safety
Maia Duishvili	Senior Executive Assistant	World Bank
Mamuka Pilavri	n.a.	Municipality of Tianeti
Manana Narimanidze	First Deputy Governor	Mtskheta-Mtianeti Region
Mzia Giorgobiani	Deputy Minister	Ministry of Regional Development and Infrastructure
Natalya Stankevich	Senior Transport Specialist	World Bank

Nika Rosebashvili	Head of Department for Relations with Regions and Local Self-Governance Bodies	Ministry of Regional Development and Infrastructure
Nikoloz Abramishvili	Economist	Municipality of Tianeti
Paata Revishvili	n.a	Roads Department Kutaisi Office
Pavle Gamkretlidze	n.a.	Roads Department of the Ministry of Regional Development and Infrastructure
Petrus Benjamin Gericke	Lead Transport Specialist	World Bank
Raymond Franklin Soames Job	Lead Transport Specialist	World Bank
Sebastian-A Molineus	Country Director	World Bank
Shalva Kereselidze	Governor	Mtskheta-Mtianeti Region
Simon Guledani	First Deputy Governor	Shida Kartli Region
Tamaz Jangirashvili	Representative of Mayor of Tianeti	Municipality of Tianeti
Tamaz Mechiauri	Mayor	Municipality of Tianeti
Tengiz Gogotishvili	Urban Specialist	World Bank
Tinatin Papashvili	Inspector of Especially Important Cases	Ministry of Internal Affairs
Zurab Bekauri	Representative of Mayor of Tianeti	Municipality of Tianeti
Zurab Khaburzania	n.a	Roads Department Kutaisi Office

Source: Independent Evaluation Group elaboration.

Note: n.a. = not available.

Appendix E. Borrower Comments

Comments on Project Performance Assessment Report

Georgia

Secondary and Local Roads Project

Kakheti Regional Roads Improvement Project

Page viii, statement: “Upgrading a road that is barely passable can make it less safe despite the implementation of road safety engineering measures. The road department carried out a road safety audit in the design phase, implemented road safety engineering measures, and organized a one-time road safety campaign. Nevertheless, the number of road fatalities increased. Because road improvements lend themselves to speeding, more than just normal road safety engineering measures are required to make a new road safe, including above all speed restrictions and their strict enforcement.”

Comment: The critic is very abstract, especially when stated at the same time that the activities had been carried out.

Page viii, statement: “**The successful introduction of performance-based maintenance and rehabilitation contracts requires contractors to be aware about the paradigm shift such contracts imply to avoid work delays and financial losses.** Before launching the first new contract, the road department organized a workshop for the construction industry and provided contractors with the opportunity to ask questions in the pre-bid meeting. This was not enough, and contractors had difficulties grasping the lump sum payment concept and shifting to the long-term planning perspective of “you invest today to save tomorrow,” which the new contract modality entails. It led to several missed performance targets, work delays, and financial losses to the contractor.”

Comment: It shall be considered, that the work delays are unforeseen events taking place during the execution of the Contract, the output-based rehabilitation works on 37.5-km long sections were fully completed and taken over by RD in line with the OPRC by August, 2018.

As for the several performance targets, we’d like to point to the Public Opinion Survey regarding the Road Users Satisfaction as a result of implementing OPRC in Kakheti, that has been significantly increased due to this specific project, in particular:

- While 25% of respondents mentioned satisfaction with the road considering all parameters in 2015, the satisfaction has increased three times in 2018 and reached 75%;

- The number of respondents dissatisfied with the road has been minimized, because if the number of respondents dissatisfied with the road equaled to 31% in 2015, only 4% of respondents expressed dissatisfaction in 2018;
- As for the Control area, respondents there were mostly neither satisfied nor dissatisfied (57%) in 2015. A positive tendency should be mentioned because while 20% of the interviewed expressed satisfaction with the road in the Control area 2015, their number reached 45% in 2018.

Page 7, para 2.3, statement: “Road Department staff at headquarters, confirmed that maintenance works are prioritized based on traffic volumes and the strategic importance of certain roads. Staff in the regional office, however, pointed out that no prioritization takes place.”

Comment: Planning and prioritization is centralized and takes place permanently.

Page 8, para 2.6, statement: “Between 2012 and 2018, on average 69 percent of the road department’s budget went to maintenance and rehabilitation, which includes periodic maintenance.”

Comment: Between 2012 and 2018, on average 39 percent of the road department’s budget went to rehabilitation, maintenance (periodic, routine), emergency works and 61 percent to construction.

Page 9, para 2.9, statement: Georgia has had success in introducing new road work contracting modalities. The teething problems in the implementation of the design and build and performance-based rehabilitation and maintenance contracts in Georgia were reasonable and common in many countries, and a large use of these modalities is underway. The road department awarded the first design and build contract under the Kakheti Project and eight more contracts under successive World Bank projects. It is currently preparing the first design and build contract to be financed with their own budget. Although some of these contracts faced issues during implementation, these were not related to their innovative features. The road department implemented the first performance-based rehabilitation and maintenance contract in the Kakheti region under the second SRLP. As to be expected, this experience was not exempt from challenges and it provided rich lessons learned (see section 3). However, IEG observed great enthusiasm amongst road department staff about the approach, and a second contract, to be financed with World Bank resources, is currently under preparation. The road department also asked the Asian Development Bank to finance performance-based contracts. Road department management expressed its satisfaction with the performance-based contracting model and an interest to apply it to locally financed road

works. The two contractors interviewed by IEG were also very positive about their experience with the new contracting modalities.

Comment: In difference from page viii, it is mentioned that two contractors interviewed by IEG were also very positive about their experience with the new contracting modalities.

Page 14, para 2.29, statement: “The speed radars provided under this project are no longer in use because they are obsolete.”

Comment: The speed radars have not been provided under this project. RD procured tablets which are used by the Patrol Police.

Page 53, Procurement, statement: “Although the ICR reported that the road department decided to use the World Bank procurement methods for activities financed with government budget, IEG was not able to confirm this information.”

Comment: Procurement financed with government budget is regulated by the Law on Public Procurement and related by-laws. Harmonization of the public procurement regulations with EU directives is ongoing. Decision to use the World Bank procurement methods in public procurement has never been made by RD.