



**ASIAN INFRASTRUCTURE  
INVESTMENT BANK**

PD 0021-GEO

May 30, 2017

**PROJECT DOCUMENT  
OF  
THE ASIAN INFRASTRUCTURE INVESTMENT BANK**

**Georgia**

**Batumi Bypass Road Project**

This document has a restricted distribution and may be used by the recipients only in performance of their official duties. Its contents may not otherwise be disclosed without the Bank's authorization.

## **CURRENCY EQUIVALENTS**

(As of May 19, 2017)

Currency Unit	-	Lari (GEL)
GEL1.00	=	US\$0.4132
US\$1.00	=	GEL2.4200

## **FISCAL YEAR**

January 1 – December 31

## **ABBREVIATIONS AND ACRONYMS**

AADT	Annual Average Daily Traffic
ADB	Asian Development Bank
AiIB	Asian Infrastructure Investment Bank
CAREC	Central Asia Regional Economic Cooperation
EIA	Environmental Impact Assessment
EIB	European Investment Bank
EIRR	Economic Internal Rate of Return
EMP	Environmental Management Plan
ETCIC	Eurasian Transport Corridor Investment Center
EWB	East–West Highway
GDP	Gross Domestic Product
GNI	Gross National Income
IPDRD	International Procurement and Donor Reporting Division
Km	Kilometer
LARP	Land Acquisition and Resettlement Plan
MRDI	Ministry of Regional Development and Infrastructure
NPV	Net Present Value
PBM	Performance-Based Maintenance
RD	Roads Department
TOR	Terms of Reference
VOC	Vehicle Operating Cost
WB	World Bank

## **CONTENTS OF THE PROJECT DOCUMENT**

<b>1. PROJECT SUMMARY SHEET .....</b>	<b>1</b>
<b>2. STRATEGIC CONTEXT .....</b>	<b>3</b>
A. Country Context.....	3
B. Sectoral and Institutional Context.....	4
<b>3. THE PROJECT .....</b>	<b>6</b>
A. Rationale .....	6
B. Objective .....	6
C. Project Description and Components.....	7
D. Cost and Financing .....	9
E. Implementation Arrangement .....	9
<b>4. PROJECT ASSESSMENT .....</b>	<b>11</b>
A. Technical.....	11
B. Economic and Financial.....	12
C. Fiduciary and Governance .....	14
D. Environmental and Social.....	16
E. Risks and Mitigation Measures.....	19
Annex 1: Design and Monitoring Framework .....	20
Annex 2: Economic and Financial Analysis.....	22
Annex 3. Sovereign Credit Fact Sheet-Georgia.....	29
Annex 4. Risk Assessment and Risk Management Plan .....	31

## 1. PROJECT SUMMARY SHEET

### Georgia Batumi Bypass Road Project

Project No.	000021
Client Borrower(s) Implementation Agency	Georgia Roads Department, Ministry of Regional Development and Infrastructure
Sector(s) Subsector(s)	Transportation Roads
Project Objectives / Brief Project Description	The objective of the Project is to improve regional connectivity and efficiency of road transport along the East–West Highway in Georgia. The Project will construct a new two-lane road approximately 14.3 km long, in a key section of the East–West Highway that skirts the port city of Batumi.
Project Implementation Period (Start Date and End Date)	Start Date: July 2017 End Date: December 2022
Expected Loan Closing Date	June 30, 2023
Project Cost and Financing Plan	Total Project Cost: US\$315.2 million Financing Plan: AIIB: US\$114.0 million ADB: €108.19 million (US\$114.0 million equivalent) Government: US\$87.2 million
AIIB Loan (Size and Terms)	US\$114.0 million 25-year term, including a grace period of 14 years
Co-financing (If any) (Co-financier(s), Size and Terms)	ADB: €108.19 million (US\$114.0 million equivalent); 24-year term, including a grace period of 13 years
Environmental and Social Category	A
Project Risk (Low/Medium/High)	Medium
Conditions for Effectiveness and Disbursement (If any)	Cross-Effectiveness of ADB Loan Agreement
Key Covenants	The Borrower shall (i) provide counterpart funds for Project implementation on time; (ii) ensure that the Ministry of Regional Development and Infrastructure and the Roads Department have sufficient funds to meet their obligations arising

	from any works, goods and/or consulting services contracts; and (iii) ensure that adequate budgetary and other resources are allocated and promptly provided for the operation and maintenance of all roads constructed and/or maintained under the Project.
Policy Assurance	The Vice President, Policy and Strategy confirms an overall assurance that the Bank is in compliance with the policies applicable to the Project.

<b>President</b>	Jin Liqun
<b>Vice-President, CIO</b>	D.J. Pandian
<b>Director General, Investment Operations</b>	Supee Teravaninthorn
<b>Manager, Investment Operations</b>	Ke Fang
<b>Project Team Leader</b>	Ghufran Shafi, Senior Investment Operations Specialist
<b>Project Team Members</b>	Alexander I. Ugut, Principal Risk Specialist Amiko Sudo, Office of the General Counsel Bin Wang, Senior Policy & Strategy Officer Chongwu Sun, Environmental Specialist, Consultant Ian Nightingale, Procurement Advisor Jang Ping Thia, Senior Economist Sang Gyoon Lee, Senior Investment Operations Specialist Somnath Basu, Senior Social Development Specialist Yige Zhang, Project Assistant Yitzhak Kamhi, Transport Advisor, Consultant

## 2. STRATEGIC CONTEXT

### A. Country Context

1. Georgia is an upper-middle-income country with a gross domestic product (GDP) of around US\$14 billion in 2015, a population of 3.7 million, and a per capita GDP of US\$3,765.<sup>1</sup> Driven by capital inflows, Georgia's economy grew strongly until the 2008 twin crises of the armed conflict with Russia and the global economic downturn. Post-crisis, high public capital spending and tourism inflows contributed to stabilization of the economy. From the beginning of 2014, Georgia has again been hit by negative external shocks that have had a persistent adverse impact on the economy. Lower oil and commodity prices have affected the region's growth, and the demand for Georgia's goods and services. The Lari depreciated by 29% against the US Dollar during 2015.
2. The Georgian economy has been able to withstand these adversities, thanks in part to its prudent fiscal management, strong institutional setting, and realized potential in hydroelectricity generation, agriculture and tourism industry. With a significant increase in government spending in the run-up to the October 2016 parliamentary elections, annual growth is now forecast to reach 5% by 2018. That said, risks to the economy remain. Weak external demand and low domestic savings resulted in a large current account deficit of close to 12% of GDP during 2016–17. External debt reached 107% of GDP in 2015. Continuing high unemployment is another risk. The fiscal deficit is expected to be between 4 and 5% of GDP in 2016 because of increased social spending and expenditures and adoption of a corporate dividend tax model.
3. Despite challenges, Georgia has undertaken deep economic reforms in recent years, achieving major improvements in the investment climate. The Government's priorities are now focused on further improving and strengthening investor confidence to attract more foreign investment and boost economic growth. Reforms in tax, investment policy and trade logistics are expected to contribute to increased transparency and investor confidence. These are crucial for growth in a small, open economy like that of Georgia, and are high on the Government's agenda.
4. Although Georgia has a small industrial base, with the manufacturing sector contributing less than 10% of GDP, it has a sizeable trade sector. With a relatively compact area (697,000 km<sup>2</sup>) and small population, it stands at a crossroads between the Black Sea region and Central Asia. Georgia thus plays a significant role in transportation between Europe and Asia. It is also key to increasing connectivity between Russia in the North, Turkey in the West, and Armenia and Azerbaijan in the South and East. As a case in point, the Southern Gas Corridor will see a major gas pipeline run through Georgia, transporting gas from Azerbaijan to Turkey and Europe. Improving connectivity is therefore not just an important aspect for Georgia's economy, but will also induce improved regional connectivity.
5. Demonstrating its proactive attitude on economic reforms, the Government of Georgia approved a socio-economic development strategy – “Georgia 2020”<sup>2</sup> – in 2014 to improve its economic growth and social development based on its comparative advantage, including its geographical position. The strategy

---

<sup>1</sup> Based on World Bank's Atlas method which defines upper middle-income economies as those with a Gross National Income (GNI) per capita between \$4,036 and \$12,475. Georgia's GNI per capita was \$4,160 in 2015.

<sup>2</sup> Government of Georgia 2014. *Socio-Economic Development Strategy, “Georgia 2020”*

notes that Georgia will pursue efficient, inclusive and environmentally sustainable growth, and will set relevant targets including reducing the fiscal deficit to 2.5% by 2017 and to 1.5 - 2% by 2020; decreasing the inflation rate to 3% by 2017-2018; preserving public debt at less than 40% of GDP and international reserves at 3.5–4 months' worth of imports. The strategy also reflected priorities for achieving long-term growth, including integration with the European Union and further development of local infrastructure. Among these, completion of the East–West Highway (EWH) is one of the country's highest priorities.

## **B. Sectoral and Institutional Context**

6. The Government aims to leverage the country's transit and trade potential to boost private sector competitiveness and inclusive economic growth. Georgia 2020 emphasizes environmental sustainability and Georgia's integration within regional and international transport systems. The broad strategic directions are (i) improving the transport system to link all parts of the country; and (ii) connecting its ports and airports to neighboring countries and beyond. Key to this strategy is streamlining transport infrastructure and developing logistical centers. Road network development is a top priority. The upgrading of international roads, including the EWH, to European standards has received the largest share of public funds in the sector since 2008. There is also increasing emphasis on north-south international roads, and secondary and local roads that connect regional centers and markets.

7. At independence, Georgia inherited a well-developed transportation system consisting of five modes – road, rail, sea, air, and pipelines. All provinces, cities, towns, and neighboring countries are connected either directly or indirectly by at least one of these modes. To improve these connections and reap the benefits of providing an efficient system for international travel and trade between Central Asia and Europe, successive governments have restructured institutions and delegated authority for modernizing the transport system to line agencies. This has helped draw private capital into aviation, maritime services and pipelines. Investment in and management of ports are now undertaken by private operators under concession agreements, or as full owners of facilities. Transport services also have been liberalized in the railway sector; the Georgian Railways operates as a semi-autonomous enterprise. The road network, however, has continued to be a physical asset owned and operated in a traditional, public-sector manner.

8. Along with major country reforms to improve the business climate and governance, Georgia has successfully implemented a series of fundamental reforms and interventions in the transportation and logistics sector over the last 10 years. It has radically improved its value proposition as a transit country by modernizing its transport infrastructure, improving border clearance procedures, and liberalizing the provision of services in many key sectors that ensure better international connectivity with global markets. Since 2005, when Georgia started revising rules and regulations on the supply of transport infrastructure and services, the transport sector has witnessed double digit annual growth in freight handling at ports, passenger traffic at airports and cross-border cargo movement. The main road network, consisting of about 22,000 km of international, secondary and local roads, is the most significant component of the transport system. Both domestic and international passenger transport is almost entirely road-based.

9. The approximately 412 km EWH is the main road link, providing the fastest surface access from the east to the west. It plays a strategic role, and is a part of three international road networks – European,

Central Asia Regional Economic Cooperation (CAREC),<sup>3</sup> and Asian – extending from the Red Bridge at the Azerbaijan border to Sarpi at the Turkish border. Nearly 60% of international trade crossing Georgia moves on the EWH. Between 2009 and 2013, average daily traffic on some parts of the EWH increased by more than 50%, to about 12,000 vehicles. Two main transit roads of the European network, E60 and E70, form the EWH portion of the Europe-Asia corridor through the Caucasus.<sup>4</sup> E60 connects Georgia’s capital city of Tbilisi with the border of Azerbaijan and runs westward to connect to E70 near the Black Sea. E70 then runs south, serving the Black Sea ports of Poti and Batumi, and finally to the border with Turkey. The EWH is a central piece in the Government’s strategy for the country to be a transport and logistics hub in the region, especially since Georgia became a full member of CAREC in 2016. The EWH accounts for 23% of vehicle utilization on Georgia’s roads and 47% of vehicle utilization on Georgia’s international roads in the country. The 2014 Enabling Trade Index ranks Georgia 56th out of 138 countries for availability and quality of transport infrastructure. Improvement of the EWH will increase connectivity between the Caspian Sea and the Black Sea, lower cost of transport and logistics, and improve Georgia’s transportation ranking and connection to global markets.

10. Responsibility for infrastructure policy and planning in Georgia, including roads and highways, lies with the Ministry of Regional Development and Infrastructure (MRDI). The Roads Department (RD) of MRDI is responsible for construction, maintenance, operation and management of the roads, both national (which includes international) and secondary. The road network in Georgia includes about 22,000 km, of which about 6,835 km are international and secondary. The capacity of the RD has been stretched to deliver substantial investment programs along the EWH and for secondary roads, yet it has managed to deliver such programs essentially on time and of the requisite quality.

11. Since 2004, the Government’s public expenditure for road construction and rehabilitation has increased by about 13% per year. To meet its aspiration to complete the EWH, the Government has decided to finance the Project using its own budget and with significant support from international financial institutions. The World Bank (WB) has financed four road improvement projects along the EWH, while the Asian Development Bank (ADB) approved a multitranches financing facility, mainly for E70, to complement the Government’s initial investment to upgrade the EWH. However, Government budget allocations for road maintenance have lagged behind, increasing only about 6% per year. Development partners have jointly undertaken policy dialogue to improve road maintenance and enhance the sustainability of road networks. Such efforts have been three-pronged: (i) increasing the fiscal budget allocation for road maintenance; (ii) reconstructing and rehabilitating international and secondary roads in poor condition (maintenance backlogged), thereby reducing overall demand for road maintenance funds; and (iii) spending the fiscal budget allocated for road maintenance more efficiently.

---

<sup>3</sup> The Central Asia Regional Economic Cooperation (CAREC) Program is a partnership of 11 countries (Afghanistan, Azerbaijan, People’s Republic of China, Georgia, Kazakhstan, Kyrgyz Republic, Mongolia, Pakistan, Tajikistan, Turkmenistan, and Uzbekistan), supported by six multilateral institutions, working together to promote development through cooperation, leading to accelerated growth and poverty reduction.

<sup>4</sup> The E60 and E70 highways are defined in the European Agreement on Main International Traffic Arteries under the auspices of the United Nations Economic Commission for Europe.

### 3. THE PROJECT

#### A. Rationale

12. The Project is consistent with the Bank's mandate of promoting economic growth through infrastructure investment in the region. The Project will enhance regional connectivity and trade, and support tourism development. It will produce several benefits, including lower transportation costs, reduced travel time and reduced shipment time for agricultural products.

13. Geographically, Georgia is a land bridge between the Black Sea and the Caspian Sea, making it a transit corridor connecting Europe and Asia. Roads from the port cities on the Black Sea, such as Poti and Batumi, as well as the trade routes coming from Turkey, merge on the Georgian highways of E70 and E60 and connect to the Caspian Sea ports, such as Baku in Azerbaijan. The EWH between Azerbaijan and Georgia is already a major route for oil exports from Azerbaijan and Central Asian countries to the ports of Poti and Batumi.

14. While distances on the EWH are relatively short, poor conditions, accidents and slow traffic have often resulted in long transit times and high transport costs. Therefore, the Government has accorded high priority in recent years to upgrading the EWH to international motorway standards, with the support of international financial institutions including ADB, the European Investment Bank (EIB), WB and the Japan International Cooperation Agency. In line with its transport strategy, the country is making large investments to improve its highways and attractiveness as a transit hub. Building on the success of ongoing EWH projects, the proposed Project will further improve connectivity by completing an important transit link, a modern bypass road skirting the city of Batumi on the Black Sea coast.

15. **Rationale for public sector financing:** Public sector financing is the appropriate vehicle for construction of the Batumi bypass road due to large initial costs and technical complexities. Public investment in road infrastructure is a key tool for the Government to promote the country's development, including the private sector. Currently, road construction in Georgia is only accomplished through Government action, but opportunities to attract and involve the private sector and private operators in developing, operating and maintaining the infrastructure are being studied under different initiatives.

16. **Value-added of the Bank:** Support from the Bank is needed to complement and contribute to the RD's efforts by supporting (i) the quality of engineering designs, physical construction and quality assurance; (ii) the sustainability of the infrastructure; (iii) the application of internationally acceptable procedures for management of environmental and social risks and impacts; and (iv) the establishment of adequate financial, procurement and project management arrangements. More specifically, the Bank mobilized technical expertise during its due diligence to review the proposed technical design – of bridges, tunnels and interchanges – and the selected contracting mechanism. Several issues were highlighted and recommendations were proposed to the Government based on international experience and global best practice to help minimize the identified risks and potentially unwanted outcomes.

#### B. Objective

17. The objective of the Project is to improve regional connectivity and efficiency for road transport along the EWH in Georgia. The proposed performance indicators, at the outcome level, include reduced

travel time and, at the output level, construction of an approximately 14.3 km two-lane bypass road and routine and periodic maintenance through performance-based maintenance (PBM) contracts.

### C. Project Description and Components

18. The upgrade and improvement of the EWH is part of a larger effort coordinated by development partners to support the Government in completing this highway corridor. Section B above defines this higher-level objective to which the Project contributes, and for which the development partners are jointly extending assistance to the Government's efforts.

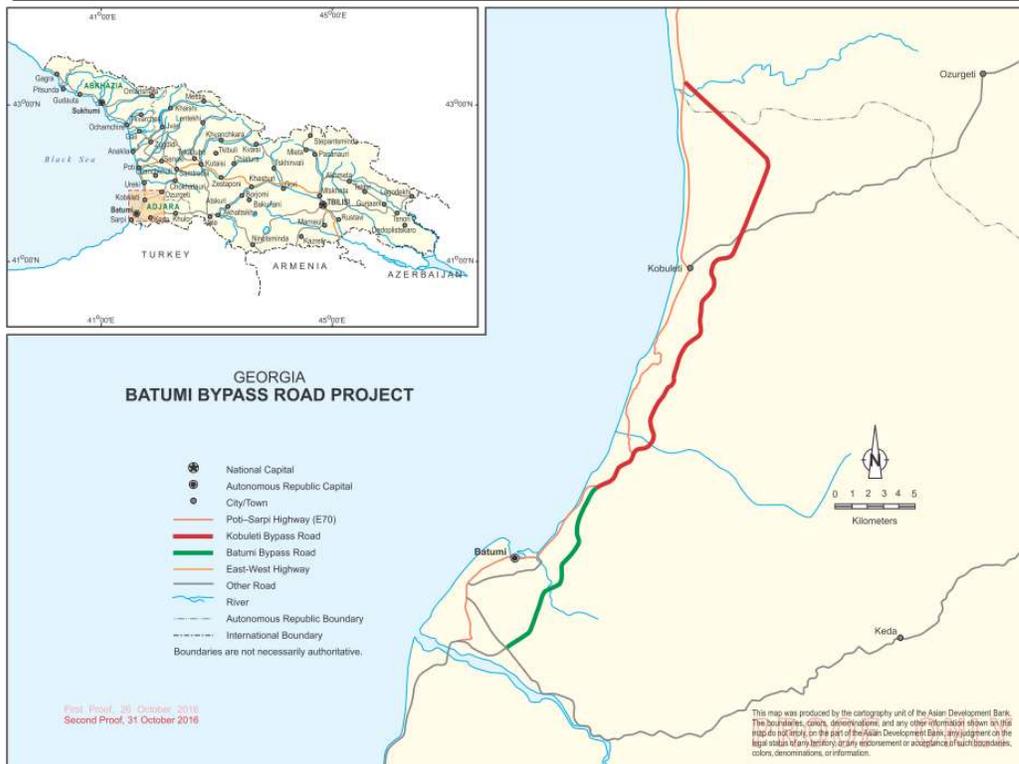
19. Batumi is the second largest city in Georgia and a major port city in the southwest region, bordered by the Black Sea to the west and Turkey to the south. The North-West E70 highway (Senaki-Poti-Batumi-Sarpi/Turkish Border) passes through Batumi, connecting Sarpi at the Turkish border to the port of Poti at the Black Sea (Figure 1). The traffic conditions in Batumi have been aggravated by transit traffic of heavy goods and passengers running through the city center and mixing with already dense urban traffic. This not only causes problems of congestion for the transit traffic but also poses serious environmental, social and safety issues for the local population and tourists in resort areas.

20. The Batumi bypass is one of two key sections of E70 along the EWH that need to be constructed per international standards (Figure 1). ADB is assisting in construction of the first section, the 28 km Kobuleti bypass, which is scheduled for completion by the end of 2017. The Batumi bypass is a natural continuation of the Government's efforts to modernize the highways by bypassing dense urban towns and providing unhindered passage to transit traffic. The Bank's loan will co-finance the civil works for construction of the Batumi bypass road and associated construction supervision consulting services (see paragraphs 21 and 22).

21. **Batumi bypass civil works:** The Project will construct a new two-lane controlled-access highway, approximately 14.3 kms long, to bypass the port city of Batumi. The road will be constructed with a new alignment, which passes through several hilly to mountainous settlements. Due to the hilly nature of the terrain, this stretch of road requires construction of 5 tunnels and 19 bridges over rivers and valleys. The combined length of the tunnels is about 3.8 km, while the combined length of bridges is about 4.5 km. The longest bridge, which is 1.1 km, will be constructed over the Makhvilauri River. Additionally, the highway will have 4 grade-separated interchanges to regulate through traffic with local attributes.

22. **Construction supervision and quality assurance services:** The Project will also finance construction supervision and quality assurance services associated with the civil works, including specialized structural and geotechnical works. Prior to commencement of construction, a construction supervision consultant appointed by the Government will assist the RD in reviewing the detailed design and, if needed, updating the designs for construction.

23. **PBM contracts** will be financed solely through ADB's co-financing. Under this component, the routine and periodic maintenance work for about 200 km of international and connecting secondary roads will be contracted out. The PBM component will support both civil works and the consulting services for design as well as construction supervision of works.



Source: ADB

**Figure 1: Project Map**  
(Top: Georgian EWH consisting of E60 and E70, Below: E70 section of EWH)

## D. Cost and Financing

24. The total project cost is estimated at US\$315.2 million. The Project will be jointly co-financed by the Bank and ADB (Table 1). The expected financing plan is comprised of (i) a sovereign-backed loan of US\$114 million from the Bank, with a 25-year term, including a grace period of 14 years, in accordance with the Bank's standard pricing, (ii) a sovereign-backed loan of €108.19 million (US\$114 million equivalent) from ADB, and (iii) US\$87.2 million from the Government as counterpart funds for land acquisition, resettlement, and taxes and duties.

**Table 1: Project Cost and Financing Plan  
(US\$ million)**

Project activities	Cost	Financing		
		AIB	ADB	GoG
Batumi Bypass Civil Works	168.1	100.5	67.6	-
Consulting Services for Construction Supervision	7.0	3.5	3.5	-
Performance-based Maintenance	13.0	-	13.0	-
Land Acquisition and Resettlement	42.3	-	-	42.3
Project Management & Institutional	1.0	-	1.0	-
Taxes and Duties	44.9	-	-	44.9
Contingencies	22.1	-	22.1	-
Financial Charges during Construction	16.8	10.0	6.8	-
<b>Total</b>	<b>315.2</b>	<b>114.0</b>	<b>114.0</b>	<b>87.2</b>

GoG = Government of Georgia

## E. Implementation Arrangement

25. The MRDI will be the executing agency and the RD, assisted by the Eurasian Transport Corridor Investment Center (ETCIC),<sup>5</sup> will be the implementing agency. The International Procurement and Donor Reporting Division (IPDRD) of the RD will handle all Project implementation activities under the supervision and guidance of the Chair and Vice-chair of the RD. The IPDRD is a special unit within RD responsible for procurement, monitoring and evaluation of projects financed by development aid agencies. Specific units in the RD oversee environmental monitoring, road safety and land acquisition and resettlement. As the ongoing EWH projects demonstrate, these implementation arrangements have been satisfactory in terms of financial management, procurement, and management of environmental and social risks and impacts.

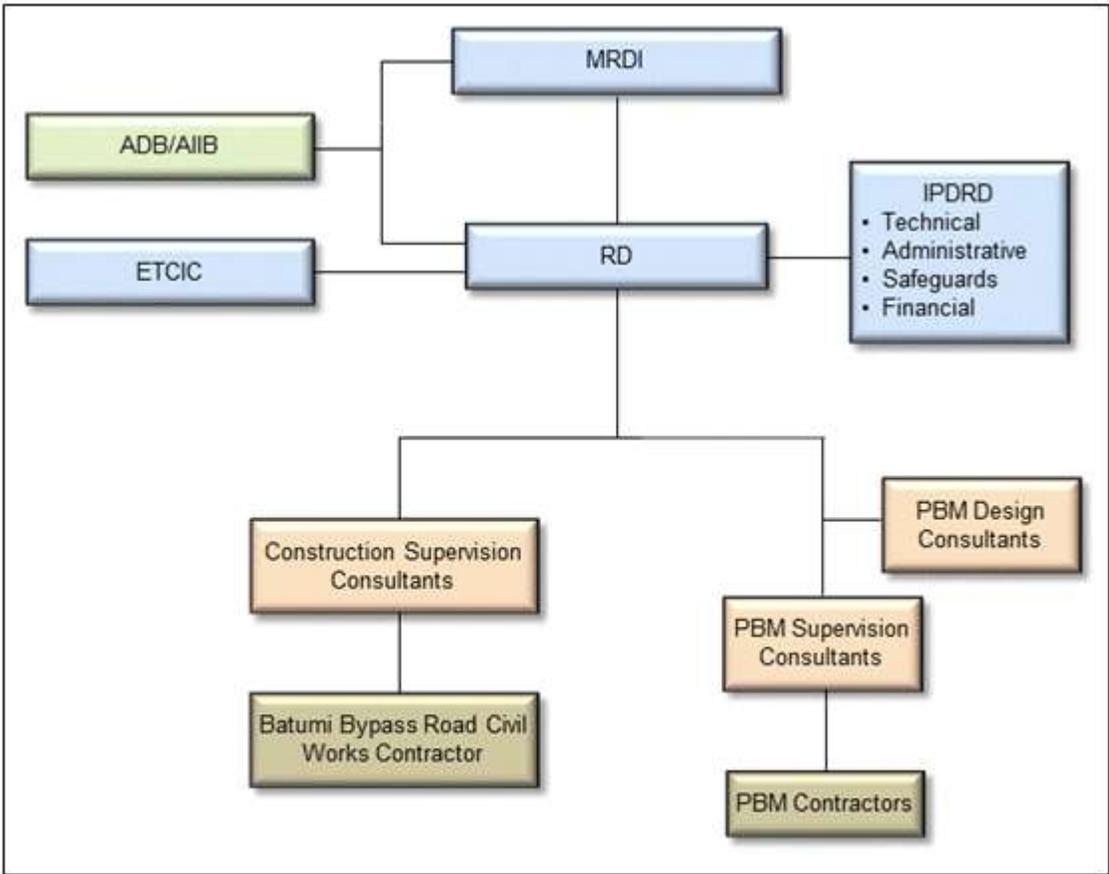
26. ADB will be the lead co-financier and will administer the Bank's loan on behalf of the Bank. For the purposes of joint co-financing, ADB's Procurement Guidelines (2015) and Guidelines on the Use of Consultants (2013) will be applied. ADB has agreed to allow universal eligibility for the procurement of

<sup>5</sup> ETCIC is a government department created by a Presidential Decree in 1995. It serves as the financial management unit of the RD and has been managing the projects' accounts since its creation.

the required works and consultancy contracts under the Project. With the application of universal eligibility, ADB’s procurement guidelines can be considered as consistent with the core principles of the Bank’s Procurement Policy.

27. The Bank’s loan will co-finance a single civil works contract for construction of the Batumi bypass road (estimated to cost approximately US\$168 million) and associated construction supervision consulting services (estimated to cost approximately US\$7 million). Advance contracting has been undertaken for procurement of civil works and consulting services to facilitate project implementation. The bidding documents and consultants’ terms of reference of these packages prepared by the RD were reviewed by ADB and the Bank. Under advance contracting, the RD can complete the consultant selection process and the bidding process up to the contract award.

28. An organization structure for project management is shown in Figure 2.



ADB = Asian Development Bank, AIIB = Asian Infrastructure Investment Bank, ETCIC = Eurasian Transport Corridor Investment Center of Ministry of Regional Development and Infrastructure, IPDRD = International Procurement and Donor Reporting Division of Roads Department, MRDI = Ministry of Regional Development and Infrastructure of Georgia, RD = Roads Department of Georgia.

**Figure 2: Project Organization Structure**

29. The Project involves a partnership arrangement with ADB through joint co-financing with the Bank. The joint co-financing will be based on the co-financing arrangements between the Bank and ADB. Under the arrangement, ADB will serve as the focal point of contact vis-à-vis other parties, and will lead

the supervision of Project implementation. During implementation, it is envisaged that the Bank and ADB will conduct joint supervision missions.

#### 4. PROJECT ASSESSMENT

##### A. Technical

30. The Project supports the overall development of the EWH corridor, which has wider development impacts. In 2015, the WB supported a study to provide an analytical base to assess economy-wide benefits of investment in the EWH corridor, including the assessment of indirect impacts.<sup>6</sup> The study was conducted through a computable general equilibrium (CGE) model – a quantitative economic technique – and simulated the indirect benefits associated with the completion of the upgraded EWH. The study revealed that the indirect benefits from the EWH investment program have an overall positive impact on key macroeconomic and welfare variables over the medium and long term. Real GDP is assessed to increase by 1.5% over a medium-term horizon and 4.2% over a long-term horizon. Both exports and imports are expected to increase in the long run, with exports growing on average faster in the long run.

31. The Batumi bypass road, given its technical complexity associated with the hilly terrain, coupled with the numerous bridges and tunnels that comprise about 55% of the total length of the Project, is a challenging assignment with a potential for cost overruns during implementation. In addition, as the Project alignment and structures skirt Batumi and its fringe developments, potentially large resettlement and land acquisition costs increase the Project sensitivity to environmental and other socio-economic aspects. In that respect, the Bank enhanced its efforts related to additional technical due diligence, so that potential risks can be minimized.

32. The Project road is a single two-lane highway with a total width of 14 m (7 m of lane width, 5 m of paved shoulder width and 2 m of unpaved shoulder width). The highway has been designed in accordance with the Standard on Geometric and Structural Requirements for Highways in Georgia referencing relevant clauses of the American Association of State Highway and Transportation Officials standards for design speed of 100 km per hour. Flexible pavement is proposed in the road structure design. It involves construction of an asphalt concrete wearing course over an asphalt binding course. Depending on span length, the bridges will be constructed either as simple span reinforced concrete girders or pre/post stressed type. All tunnels consist of two-lane road with side clearances and will be constructed through mechanical excavation or by blasting. Their design is consistent with the minimum requirements of the Directive 2004/54/EC of the European Parliament on Minimum Safety Requirements for Tunnels in the Trans-European Road Networks.<sup>7</sup>

33. While the two-lane highway (suburban or rural) has been designed to carry a certain volume of traffic, following the targeted level of service (from the point of view of highway capacity affordable to Georgia), the interchanges at intersection points are of a very high level of design, involving multilevel structures occupying very large areas. Since the received traffic data did not provide sufficient

---

<sup>6</sup> GEORGIA: Assessing Economy Wide Indirect Impacts of East-West Highway Corridor Investments through CGE Modelling, The World Bank, June 2015.

<sup>7</sup> The Directive lays down minimum safety standards regarding the various organizational, structural, technical and operational aspects of road tunnels that form part of designated trans-European transport infrastructure.

information, there is a need to review the current and predicted traffic, provide origin/destination analysis and predict the traffic dispersion at intersecting points, so as to ensure that the interchanges are not grossly oversized, which could be unjustifiably costly. Oversize could also complicate implementation as well as increase environmental and resettlement costs given the potentially large area these interchanges will occupy. Remedial actions to address these issues are described in the following paragraphs 34 and 35.

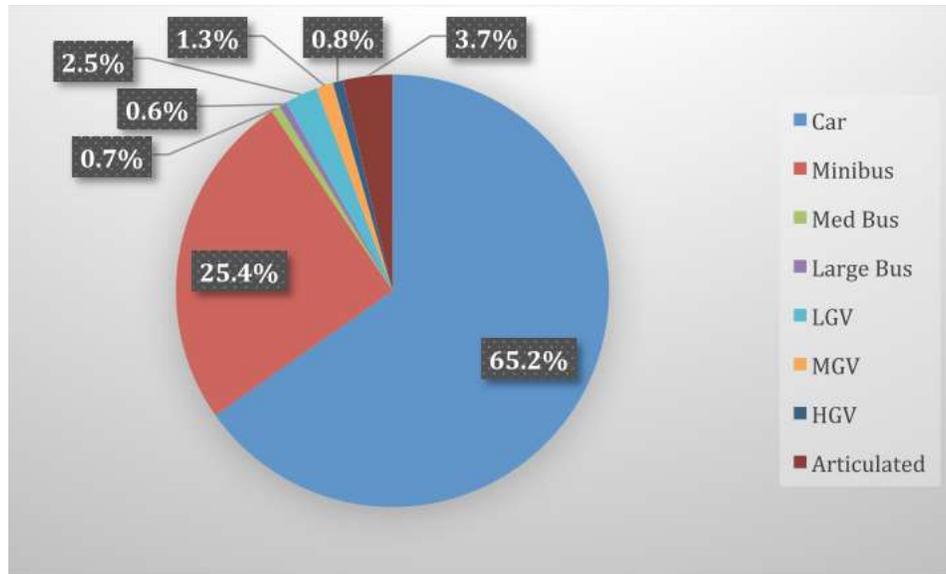
34. Status of readiness and the Project design integrity involve several general issues which must be closely supervised in order to minimize the associated risks during implementation of this already fully designed Project. These include: (i) selection of qualified contractors technically and financially capable to implement the Project during the relatively short period of time for construction (2.5 years); (ii) selection of a supervision consultant (the Engineer under the civil works contract) capable of traditional quality assurance, and timely and orderly review of supplementary designs prepared during implementation; (iii) full coordination and clear structure of management of the Project on the part of the RD, the Bank and ADB; and (iv) timely and orderly provision of full access to the Project site by the contractor to avoid any potential claims. In addition, the Bank proposed several measures to minimize the potential risks related to contract and construction management of civil works, including an extended defect liability period, increased performance security and additional studies related to traffic volume and traffic analysis.

35. As part of its terms of reference, the design review and construction supervision consultant will review the contract design, in particular bridges and tunnels, and recommend improvement or changes, if necessary. Within three months of the commencement of the Project's civil works, the consultant will review the designs for major intersections/interchanges along the Project road and, if justified by traffic and other studies, (i) prepare simplified designs for some or all of these intersections/interchanges based on relevant international practice; (ii) discuss the designs with the Government and ADB (ADB and the Bank will coordinate pursuant to the co-lenders' arrangement) and thereafter prepare final designs for construction; and (iii) introduce these designs into the Project civil works contract as replacements for the designs presently in the contract documents, through an appropriate contract variation.

## **B. Economic and Financial**

36. The economic analysis employs the standard cost-benefit analysis of road projects, where the cost of the road project is measured against benefits such as reduction in vehicle operating cost (VOC), reduction in travel time cost and accident rates. The economic analysis covered 2016–2041, with the first full year of operation in 2022. The analysis is based on a comparison of the with- and without-project scenarios, and used economic prices in the first quarter of 2016.

37. **Traffic Analysis and Projections:** The baseline traffic data was developed using RD's Annual Average Daily Traffic (AADT) counts and origin/destination (O/D) surveys conducted during the Project feasibility study. Seasonal adjustment factors were used to calculate the AADT. The 2015 AADT of 18,244 vehicles has an average composition of: 65% cars; 27% buses and passenger vehicles; and 8% light and heavy cargo vehicles and trucks (see Figure 3 for further breakdown). The existing traffic has led to serious traffic congestion with average vehicle speed of only 30 km per hour.



**Figure 3: Traffic Composition Along the Study Corridor**  
(LGV = light goods vehicle; MGV = medium goods vehicle; HGV = heavy goods vehicle)

38. The forecast of future traffic on the bypass road is based on 3 components: (i) normal traffic growth; (ii) diversion of traffic from existing roads to this bypass; and (iii) traffic generated from the lower user cost on the bypass. For normal growth, traffic demand elasticities (relative to GDP) of 1.2 for passenger and 1.1 for freight were used for the first 10 years; these were gradually reduced to 1.05 and 1.0, respectively, during 2041–2049. For diverted traffic, it is assumed that about 62% of freight traffic and about 43% of total traffic will divert to the bypass road. This is supported by the efforts of the City of Batumi to divert any heavy truck traffic from traversing the city center. Lastly, to estimate generated traffic, road user cost savings on the existing road were calculated, and then the price elasticity was applied. An elasticity of 10% for light-to-medium passenger vehicles and light goods vehicles was used. With these components, a summary of the traffic forecast is given in Table 2.

**Table 2: Projected Traffic in Selected Years**  
(number of vehicles per day)

Year	AADT Without Project	AADT With Project			
	Existing Road	Existing Road	Bypass Diverted	Bypass Generated	Bypass Total
2022	26,268	14,672	11,596	1,438	13,034
2030	36,713	20,523	16,190	2,012	18,202
2040	49,960	27,953	22,006	2,742	24,748

39. **Economic Cost of the Project:** This includes (i) capital investment, including civil works, environmental mitigation, land acquisition and resettlement, and consulting services for construction supervision; and (ii) road maintenance. Costs related to taxes and duties and financing charges during implementation were excluded. The Project costs were divided into tradable and non-tradable components. The costs of non-tradable components were converted into the world price numeraire using

the standard conversion factor of 0.991 in line with standard methodology.<sup>8</sup> A shadow wage rate factor of 0.7 was used to estimate the economic price of unskilled labor. Capital investment economic costs were estimated at US\$15.4 million per km for the bypass road. The annual average routine maintenance cost of the existing road between Kobuleti and Sarpi under the without-Project scenario is estimated at US\$2,150 per km per year. The same annual average routine maintenance cost was assumed for the Project bypass road.

40. **Economic Benefits:** The savings in travel time cost constitute a major part of the Project benefits. Traffic diverting to the Project bypass road will benefit from higher speeds on a smoother riding surface. Traffic that continues to use the existing road will also benefit from a reduction in the volume of traffic and reduced congestion. It is estimated that there would be time savings of more than 60% for most types of vehicles. Savings in VOC per km, and a reduction in traffic accidents by nearly half are also expected. The savings in VOC per km were projected to be 8.5% for cars, 17.3% for light goods vehicles and 23.8% for heavy goods vehicles.

41. **Economic Internal Rate of Return and Sensitivity Analysis:** With the above traffic projection, costs and benefits, an economic evaluation over the 25-year life cycle of the projects was undertaken. A residual value of 30% of capital costs was included in the final year of the evaluation period. The results show that the Project is economically viable, with an estimated economic internal rate of return (EIRR) of 16%, and an estimated net present value of around \$62 million at an interest rate of 12%. The sensitivity of the EIRR was tested and a 10% capital cost increase combined with a 10% benefit reduction still derives an EIRR of 13.6%, indicating a well justifiable investment (see Annex 2 for further details).

### C. Fiduciary and Governance

42. **Procurement:** Georgia's national procurement system is regulated by the 1999 Law on State Procurement (and subsequent amendments). The establishment of Georgia's Competition and State Procurement Agency facilitated procurement reform. Recent changes have strengthened the procurement system and made disclosure of contract values by procuring entities and inclusion of civil society representatives in dispute resolution procedures mandatory. Data on the value of public contracts is maintained in a public procurement database and treasury information system. Spending unit payment schedules allow access to treasury cash request data. Bidders can download public procurement contract data from the electronic tender system.

43. Georgia's anti-corruption regulatory framework is outlined in the 2009 Law of Georgia on the Conflict of Interests and Corruption in Public Service. The Investigative Division of the Prosecution Service is the key anti-corruption body. The Anti-Corruption Interagency Council under the Ministry of Justice is tasked with coordinating anti-corruption efforts. The Council comprises high-level officials (supported by a secretariat) along with nongovernmental organizations and private sector representatives. Georgia's National Anti-Corruption Strategy and Action Plan was adopted in 2005. Since 2012, the Government has taken further steps to ensure judicial independence and improve accountability and transparency in public finance, procurement, and private sector oversight. Amendments to the Law on

---

<sup>8</sup> As Georgia is assessed to have relatively little import or export taxes, the standard conversion factor is close to 1, and has relatively little impact on the cost benefit analysis.

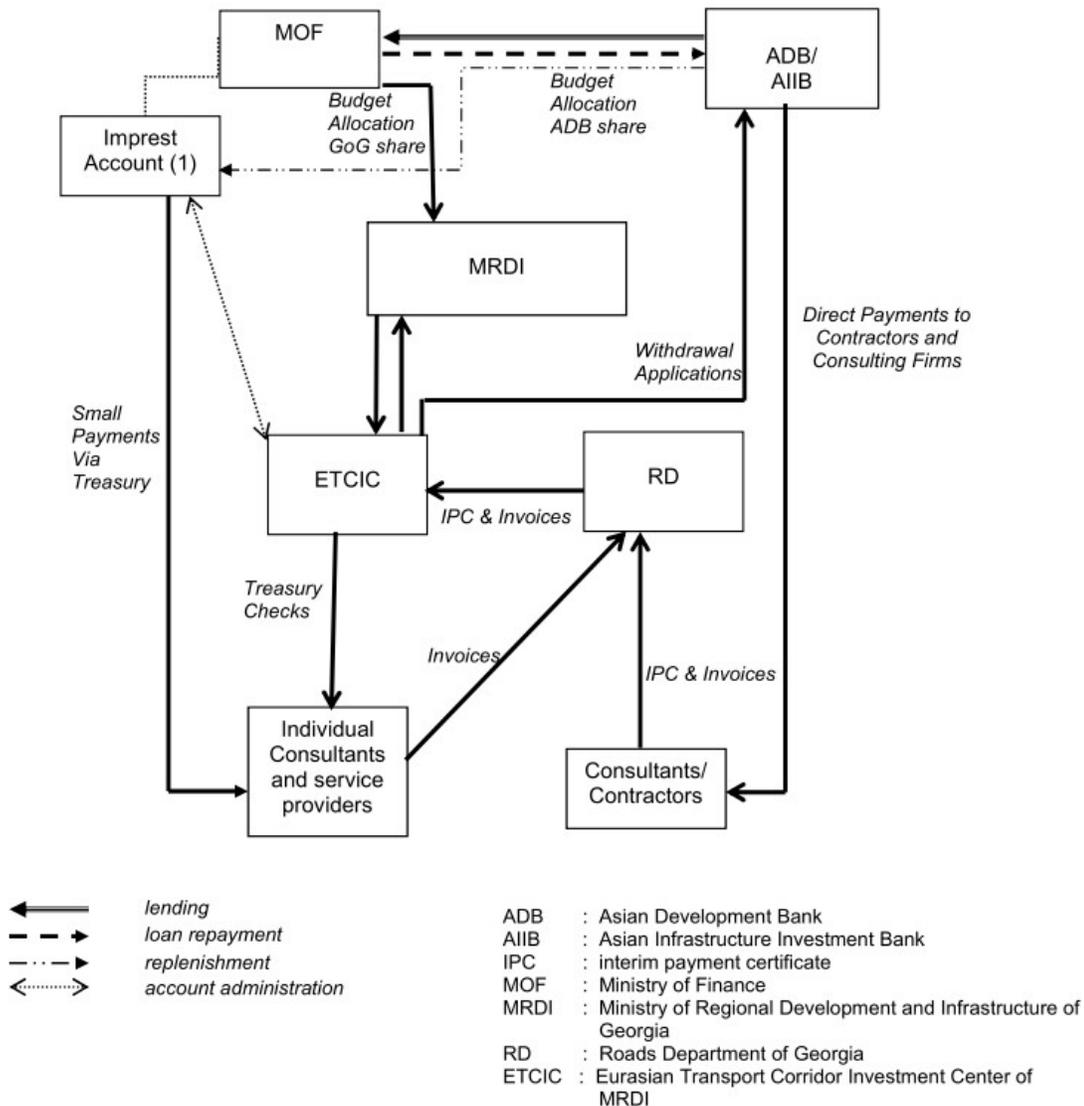
Conflict of Interests and Corruption in Public Service in 2014 seek to improve whistleblower protection, particularly expanding the channels of reporting, and providing for anonymity and protection.

44. **Financial Management:** ETCIC is accountable for the financial management of externally funded projects on the RD's behalf. ETCIC comprises professional staff members recruited from the market and trained in financial management and accounting. ETCIC's operating expenses are covered by funds from externally-funded projects; e.g., funds from the WB, ADB, and EIB. ETCIC has significant experience in financial management of donor-funded projects, including 8 closed and 6 ongoing WB projects, 2 ongoing ADB projects and 2 ongoing EIB projects. During project preparation, ADB assessed the financial management capacity of ETCIC, including funds-flow arrangements, staffing, accounting and financial reporting systems, financial information systems, and internal and external auditing arrangements. The technical capacity was considered satisfactory and ETCIC will be responsible for the financial management of the Batumi bypass road project.

45. **Retroactive financing:** Subject to compliance with applicable policies and guidelines, retroactive financing of up to 20% of the loan will be available for eligible expenditures made not more than twelve months prior to the signing date of the legal agreement.

46. **Funds Flow:** Withdrawal applications covering the loans from ADB and the Bank will be submitted by the Borrower to ADB on behalf of both banks for review. Subject to compliance with applicable terms, the Bank and ADB will each disburse its loan to finance its proportionate share of eligible expenses.

47. For direct payments, the contractors and consultants will submit their invoices or interim payment certificates as appropriate to ETCIC, which will process them and send with the required withdrawal applications to ADB. The funds flow is shown in Figure 4.



**Figure 4: Project Funds Flow**

**D. Environmental and Social**

48. The Bank has decided to use ADB’s Safeguard Policy Statement (SPS), 2009, since (i) it is consistent with the Bank’s Articles of Agreement and materially consistent with the provisions of the Bank’s Environmental and Social Policy and relevant Environmental and Social Standards; and (ii) the monitoring procedures that ADB has in place to ascertain compliance with its safeguard policies are appropriate for the Project. Under ADB’s safeguard policies, the Project has been assigned Category A for Environment and Involuntary Resettlement and Category C for Indigenous Peoples. The Bank’s Policy provides for a single categorization and, in this case, reviewing ADB’s screening process vis-à-vis the Environmental and Social Standards adopted by the Bank, the Project is assigned a Category A.

49. **Land Acquisition and Resettlement:** ADB has compiled Land Acquisition and Resettlement Plans (LARPs) for the land acquisition that will be conducted for construction of the Batumi bypass road.

The total length of the bypass has been split into two parts; the first section comprising 7 km and the second 6.7 km.

50. The LARP prepared for the first section (LARP 1; approved in August 2016) involves total acquisition of approximately 250,000 m<sup>2</sup> of land from 574 plots; this includes 236 private plots (approximately 175,000 m<sup>2</sup>) and 338 public plots (approximately 74,000 m<sup>2</sup>). Out of the total acquired plots, 315 are agricultural/arable, 254 are residential and 15 are under commercial/ business use. In the process, 245 households, with a total of 1,244 persons, have been affected. Among the affected households, 69 will be physically relocated. An entitlement matrix (Table E-2: Entitlement Matrix, LARP 1, August 2016) indicating benefits accruing to different categories of affected people has been prepared.

51. Similarly, the LARP prepared for the second section (LARP 2; approved in December 2016) involves total acquisition of approximately 384,000 m<sup>2</sup> of land from 1,143 plots, which includes 727 private plots (approximately 285,000 m<sup>2</sup>) and 416 public plots (approximately 100,000 m<sup>2</sup>). Out of the total acquired plots, 311 plots are agricultural/arable, 777 are residential, and 55 are under commercial use. In the process, 524 households with a total population of 2,807 persons have been affected and 300 households will be physically relocated. An entitlement matrix (Table E-3: Entitlement Matrix, LARP 2, December 2016) indicating benefits accruing to different categories of affected people has been prepared.

52. The Entitlement Matrices prepared for compensating the affected persons have considered the following categories: (i) permanent loss of agricultural land; (ii) loss of non-agricultural land; (iii) loss of building and structures (residential and non-residential structures); (iv) loss of Common Property Resources; and (v) loss of income and livelihood (crops, trees, enterprise, employment). Additionally, the Entitlement Matrices have also accounted for allowances payable to the affected persons due to (a) severe impacts (affected households to be physically relocated and persons suffering loss of 10% or more in income or productive assets); (b) relocation fees; (c) allowances for households qualifying as vulnerable people;<sup>9</sup> and (d) allowances due to temporary impacts (compensation to be assessed based on the nature of these temporary impacts).

53. Affected persons suffering permanent loss of agricultural lands, irrespective of whether they are title holders or non-title holders, will be eligible for cash compensation at replacement cost.<sup>10</sup> Losses for crops and trees will also be made at market rates. Non-legitimate land holders or squatters and agricultural tenants will be eligible for relocation allowances equivalent to 12 months of subsistence cost. For non-agricultural lands, affected persons that are title holders or awaiting formalization of title will be eligible for cash compensation at full replacement cost.<sup>11</sup> Non-legalized land users of non-agricultural lands will be eligible for relocation allowances equivalent to 12 months of subsistence cost. In case of both agricultural and non-agricultural land owners, if the residual land after acquisition becomes unviable, it will be acquired by the Project on request of the owner.

---

<sup>9</sup> Vulnerable households are households that are more adversely affected by virtue of ethnicity, gender, age, physical or mental disability, economic disadvantage or social status and that may have limitations in accessing the resettlement benefits as compared to others. In LARP 1 there are 92 Vulnerable households (527 people) and in LARP 2 there are 184 Vulnerable households (869 people).

<sup>10</sup> Replacement cost of land is calculated based on market rates for given land use, adding transaction costs.

<sup>11</sup> *Id.*

54. The RD is responsible for LARP implementation. A LARP implementation organogram has been provided to indicate roles and responsibilities of different units, including local self-governance systems, in implementation of the LARPs. The affected households / affected persons have been consulted regarding land acquisition and all information on entitlements has been disseminated. Land acquisition and resettlement tasks under the Project will be monitored both internally and externally. A plan for post implementation monitoring<sup>12</sup> has also been put in place to review whether the overall objectives of the implementation of LARP has been achieved.

55. **Environment:** As required by both banks for a Category A project, an Environmental Impact Assessment (EIA) was conducted to identify the potential environmental impacts, especially noise pollution and vibration during operation. The final version of the EIA was approved for disclosure in February 2017.

56. The final EIA report is a continuation of a previous environmental impact study, with incorporation of new baseline data on air, water and soil quality; sampling and measurement of noise levels; and stakeholders' consultation and information disclosure. The major negative environmental impacts are concentrated in the construction phase and include soil erosion, dust emissions, noise and vibration impacts, spoils and construction waste disposal. These impacts are significant and will cause social disruptions. Noise impacts will continue into the operational phase and will be the most significant environmental issue during project operation.

57. Noise modeling was undertaken to predict noise impacts and mitigation measures have been identified. Around 490 houses were identified as the potential receptors initially. Following the modeling of the "without mitigation" scenario, emission and noise walls were introduced to reduce the impacts on the receptors. Additional mitigation measures have been proposed for the most sensitive receptors, which include higher barriers, plantation of trees, and lastly, giving the affected households an option to relocate.

58. An environmental management plan (EMP) has been prepared with details on mitigation measures, site-specific environmental management requirement, monitoring program, emergency response plan, safety requirement, management requirement for potential changes, and documentation and reporting arrangements. Construction contractors will be responsible for implementation of the EMP during construction, and the engineering consultant engaged by the RD will be primarily responsible for supervision of EMP implementation. The Environmental Division of the RD will undertake routine and random monitoring of the specific environmental management plans addressed in the EIA. The RD will also hire external monitors for independent monitoring of EMP implementation.

59. Several rounds of public consultations have been conducted at various locations to support project preparation. Many of the concerns and opinions expressed by the community have been addressed in the EIA and the LARPs. The electronic versions of the EIA and LARPs have been placed on the websites of the RD and ADB websites.<sup>13</sup> Consultations will continue to be conducted on an ongoing basis to support implementation of the provisions of the EMP. For example, a consultation was recently conducted with a

---

<sup>12</sup> With reference to baseline data on socio-economic and standard of living parameters generated during formulation of the LARPs.

<sup>13</sup> ADB safeguard documents are accessible at: <https://www.adb.org/projects/50064-001/main#project-documents>.

section of the community potentially affected by noise and vibrations to refine the mitigation measures in the EMP to address these impacts. LARP implementation also involves continuous engagement with the affected persons.

60. **Grievances:** A Grievance Redress Mechanism/Grievance Redress Committee (involving local government officials, representatives of affected persons, representatives of local NGOs and consultants) has been put in place to allow affected persons to appeal for any disagreement on policies or practices. The affected persons have been suitably informed about their rights to register complaints either verbally or in writing, during the consultations, surveys, at time of compensation and throughout Project implementation.

#### **E. Risks and Mitigation Measures**

61. ADB has categorized the overall Project as “Complex,” rating the Project in Category A for environmental and involuntary resettlement impacts. Some of the individual elements in Project implementation, including the technical capacity of the RD, the timely relocation of some affected persons, and sustainability of the road network, are considered to have substantial risks. A risk analysis and management plan prepared by ADB is set out in Annex 4.

62. In addition, per the lessons learnt from implementation of similar projects, some issues and risks concerning contract and construction management could be anticipated. Given the input or measurement based format of the construction contract, there are significant risks in technical/cost control of Project implementation. Such risk has been considered “Substantial.” To mitigate these risks, the Bank has proposed to engage extensively with ADB in review of the procurement process, and any modifications of the construction contract, design changes or variations.

63. While Project implementation in a mountainous terrain will be difficult, the civil works involved in the Project are neither extraordinarily challenging nor unique. Construction of such projects and completion of similar civil and structural works have been successfully undertaken in Georgia before. Therefore, based on ADB’s risk assessment and available information, the Overall Project is rated “Medium Tier” by the Bank.

## Annex 1: Design and Monitoring Framework

**Impact of the project is aligned with:** Improving regional connectivity in Georgia so that it can play the role of regional transport and logistics hub (Socio-economic Development Strategy of Georgia – Georgia 2020, Government of Georgia).

Results Chain	Performance Indicators with Targets and Baselines	Data Sources and Reporting	Risks
<p><b>Outcome</b> Efficiency of road transport along the EWH in Georgia improved</p>	<p>a. Reduced travel time from Sarpi to Poti to 1.5 hours by 2023 (2016 baseline: 3.0 hours)</p>	<p>a–b. Roads Department of Georgia surveys</p>	<p>Insufficient road maintenance budget jeopardizing the sustainability of large investment in road network and preservation of road assets.</p>
<p><b>Outputs</b> 1. New bypass road skirting Batumi constructed  2. Routine and periodic maintenance carried out using PBM contracts</p>	<p>1a. 14.3 km of a new two-lane bypass road skirting Batumi constructed by 2021 with international roughness index no higher than 3.0 m/km (2016 baseline: 0 km)</p> <p>2a. By 2023, about 200 km of international roads combined with connecting secondary roads maintained by private contractors on a long-term PBM contract of no less than 5 years, with international roughness index no higher than 3.0 m/km (2016 baseline: 0 km)</p>	<p>1a–2a. Supervision consultant’s project progress report</p>	<p>A small number of affected people declining relocation and resorting to lengthy disputes outside of grievance redress mechanism, thereby disrupting construction</p> <p>Local construction industry not matured enough to absorb the PBM concept and properly assess the risk and price services accordingly.</p>

### Key Activities with Milestones

#### Output 1: New bypass road skirting Batumi constructed

- 1.1 Complete payment for compensation and relocation of affected people with no dispute or complaint by June 2017.
- 1.2 Complete bid evaluation for civil works contract by July 2017.
- 1.3 Recruit supervision consultants by July 2017.
- 1.4 Award civil works contract by October 2017.
- 1.5 Complete payment for compensation and relocation of all affected people by December 2017.
- 1.6 Complete civil works by December 2021.

#### Output 2: Routine and periodic maintenance carried out using PBM contracts

- 2.1 Recruit PBM design consultants by December 2017.
- 2.2 Complete engineering design and procurement packaging by June 2018.
- 2.3 Award PBM contracts by December 2018.

<b>Key Activities with Milestones</b>
2.4 Recruit supervision consultants by December 2018. 2.5 Complete PBM contracts by June 2023.
<b>Inputs</b> ADB: €108,190,000 (\$114.0 million equivalent [loan]) AIIB: \$114.0 million (loan) Borrower: \$87.2 million
<b>Assumptions for Partner Financing</b> Not applicable.

ADB = Asian Development Bank; AIIB = Asian Infrastructure Investment Bank; EWH = East-West Highway; m/km = meter/kilometer, OCR = Ordinary Capital Resources; PBM = performance-based maintenance.  
Source: ADB.

## Annex 2: Economic and Financial Analysis<sup>14</sup>

### I. Economic Analysis

#### A. General

1. The economic analysis assessed the construction of the Batumi bypass road on the Poti–Batumi–Sarpi Road in Georgia’s Autonomous Republic of Adjara. The Project comprises the construction of a 14.3 kilometer (km) two-lane bypass road from Makhinjauri village in the north to the juncture with the Batumi–Akhalsikhe road (E691), thereby bypassing Batumi. The existing road traverses Batumi, and serves as major urban thoroughfare through heavily built-up tourist and residential areas. The road carries a high percentage of long-distance automobile and truck traffic, and provides poor road and travel conditions, especially for transit traffic. The route is serving two incompatible functions—fast interregional and international transit traffic, and access to residential and commercial areas. This hinders the rapid movement of transit traffic, and severely impacts the local and tourist population, resulting in negative social and environmental impacts in the resort area and elsewhere. Traffic safety is also a very significant concern along the existing route. The Project will divert transit traffic away from the existing Poti–Batumi–Sarpi Road. The economic analysis covered 2016–2041, with the first full year of operation in 2022. The analysis was based on a comparison of the with- and without-project scenarios, and used economic prices in the first quarter of 2016 unless otherwise indicated.

#### B. Historic, Existing Traffic and Forecast Traffic

2. The RD conducts regular traffic counts in April, July, and October at several sites on the existing Poti–Batumi–Sarpi Road. Seasonal adjustment factors were used to calculate the annual average daily traffic. The site at the Chakvi–Makhinjauri tunnel (km 95) was used as a reference site for this economic evaluation. The annual average daily traffic increased from 11,348 vehicles in 2009 to 18,245 in 2015, an average annual increase of about 10%. Over 1,240 heavy trucks are using the existing road daily (Table A2.1). The high percentage of especially large trucks is significant especially given the steep grades on some sections of the study corridor.

**Table A2.1: Historic Kobuleti–Batumi Road Kilometer 95 Automated Traffic Counts**

Year	Minibuses <sup>a</sup> &				Total
	Car	Pickups	Buses & Trucks	Trailers & > 3 axles	
AADT 2009	7,411	3,105	456	376	11,348
AADT 2010	7,109	3,451	526	506	11,592
AADT 2011	6,865	3,364	524	560	11,313
AADT 2012	7,038	3,284	571	609	11,502
AADT 2013	11,341 <sup>b</sup>	1,360	569	1,050	14,320
AADT 2014	12,393	1,391	519	1,108	15,411
AADT 2015	16,098	368	535	1,243	18,245

AADT = annual average daily traffic.

<sup>a</sup> Minibuses carry fewer than 15 passengers.

<sup>b</sup> The RD switched from laser counters to new radar counters that have a significantly better system for identification of vehicle types and lengths, and improved accuracy.

Source: Georgian Roads Department.

<sup>14</sup> Source: ADB.

3. To forecast traffic on the Project bypass roads, projections were prepared for (i) normal traffic; (ii) diverted traffic; and (iii) generated traffic. Normal traffic is the traffic that would arise on the existing Poti–Batumi–Sarpi Road without the Project. The forecast of normal traffic was based on projections of GDP growth and the estimated income elasticity of traffic demand.<sup>15</sup> The International Monetary Fund’s forecasts for Georgia over the period to 2019 served as a starting point for the development of central growth forecasts for the national economy.<sup>16</sup> For the remainder of the evaluation period, reference was made to longer-term economic forecasting work carried out by organizations such as the Organization for Economic Cooperation and Development, with specific reference to Turkey, with whom Georgia has a close economic relationship. The resulting GDP growth forecasts for Georgia are in Table A2.2. GDP growth was projected to recover gradually from 3% in 2016 to 5% in 2020. Thereafter projected growth was reduced, reaching 2.5% during 2041–2049. Traffic demand elasticity of 1.2 for passenger traffic and 1.1 for freight was used for the first 10 years and gradually reduced to 1 during 2041–2049.

**Table A2.2: Gross Domestic Product Growth Forecasts for Georgia**

<b>From</b>	<b>to</b>	<b>% p.a.</b>	<b>from</b>	<b>to</b>	<b>% p.a.</b>
2015	2015	2.0	2021	2025	4.5
2016	2016	3.0	2026	2030	3.5
2017	2017	4.5	2031	2040	3.0
2018	2020	5.0	2041	2049	2.5

p.a. = per annum.

Source: International Monetary Fund, Organization for Economic Cooperation and Development.

4. Diverted traffic is traffic that prefers the Project bypass roads to the existing Poti–Batumi–Sarpi road. More freight traffic than passenger traffic is likely to divert. It is assumed that about 62% of freight traffic, and about 43% of total traffic, will divert to the bypass roads. This is further supported by the efforts of the City of Batumi to divert any heavy truck traffic from traversing the city center. The Project will reduce road user costs on the existing road. To estimate generated traffic, road user cost savings on the existing road were calculated and then the price elasticity was applied. An elasticity of 10% for light-to-medium passenger vehicles and light goods vehicles was used. A summary of the traffic forecast is in Table A2.3.

**Table A2.3: Projected Traffic in Selected Years**  
(number of vehicles per day)

<b>Year</b>	<b>AADT Without Project</b>		<b>AADT With Project</b>	
	<b>Existing Road</b>	<b>Existing Road</b>	<b>Bypass Diverted</b>	<b>Bypass Generated</b>
2022	26,268	14,672	11,596	1,438
2030	36,713	20,523	16,190	2,012
2040	49,960	27,953	22,006	2,742

AADT = annual average daily traffic.

Note: Using the traffic forecast presented in Table A2.3, a volume capacity analysis was undertaken that shows that the existing section without-Project scenario reaches its maximum (jam capacity) at year 2024 for the highest traffic flow period. The with-Project scenario significantly reduces the volume/capacity ratio through major traffic diversion, and provides sufficient capacity for the existing and bypass sections. Similarly, speeds on the existing facility will be significantly reduced without the bypass option. Speeds for cars can be maintained in the range of 90–100 km/h during the analysis period for the bypass facility.

<sup>15</sup> Although population or household growth is generally a determinant of projected passenger traffic, it was not considered in this traffic forecast, as the population of Georgia is essentially static.

<sup>16</sup> International Monetary Fund. 2016. *World Economic Outlook*. Washington D.C.

### **C. Economic Costs**

5. The economic costs of the Project comprise (i) capital investment, including civil works, environmental mitigation, land acquisition and resettlement, and consulting services for construction supervision; and (ii) road maintenance. Costs related to taxes and duties and financing charges during implementation were excluded. The Project costs were divided into tradable and non-tradable components. The costs of non-tradable components, such as unskilled labor and domestic materials, were converted into the world price numeraire using a conversion factor of 0.991. A shadow wage rate factor of 0.7 was used to estimate the economic price of unskilled labor. Capital investment economic costs were estimated at \$15.4 million per km for the Batumi bypass road. The annual average route maintenance cost of the existing road between Kobuleti and Sarpi under the without-Project scenario is estimated at \$2,150 per km per year. The same annual average route maintenance cost was assumed for the Project bypass roads as the existing Sarpi–Kobuleti road, which is well maintained and in good condition.

6. To attain the expected economic return on the capital investment, the Government’s ambitious road investment program needs to be supported by adequate institutional capacity. The RD must be strengthened to fulfill its planning, monitoring, and execution roles in the transformation of the economy into a market-oriented system. To make the proposed investment sustainable, the investment program will support the development of RD capacity to plan and carry out performance-based maintenance contracts. These contracts have both output- and performance-based components and consist of (i) initial repairs, so that routine maintenance can be performed (4–6 month duration); (ii) routine maintenance comprising lump-sum monthly payments per km, based on meeting defined operating and maintenance service levels (entire contract period, typically 5 years); (iii) periodic maintenance (resurfacing), according to a given annual schedule or total output in km over the contract period; and (iv) emergency maintenance works.

### **D. Economic Benefits**

7. The quantified economic benefits of the Project are (i) savings in VOCs; (ii) savings in travel time; and (iii) a reduction in traffic accidents. The savings in travel time constitute the major part of the Project benefits. Traffic diverting to the Project bypass road will benefit from higher speeds on a smoother riding surface with better vertical and horizontal alignment and less congestion. Traffic that continues to use the existing road will also benefit from a reduction in the volume of traffic and reduced congestion. All these changes will affect vehicle speeds and VOCs.

**Table A2.4: Typical Economic Benefits, by Vehicle Type**  
(\$ per kilometer)

<b>Vehicle Type</b>	<b>Existing Roads Without Bypass Roads</b>	<b>Project Bypass Roads</b>	<b>Savings</b>	<b>Savings (%)</b>
<b>A. Vehicle Operating Costs</b>				
Car	0.252	0.231	0.021	8.5
Minibus	0.310	0.242	0.068	21.8
Medium bus	0.422	0.330	0.092	21.8
Large bus	1.412	1.159	0.254	18.0
Light goods vehicle	0.290	0.239	0.050	17.3
Medium goods vehicle	0.585	0.451	0.133	22.8
Heavy goods vehicle	0.953	0.727	0.226	23.8
Articulated truck	1.423	1.038	0.385	27.0
<b>B. Travel Time Costs</b>				
Car	0.280	0.088	0.191	68.36
Minibus	1.538	0.520	1.018	66.21
Medium bus	0.935	0.340	0.595	63.61
Large bus	1.378	0.529	0.849	61.61
Light goods vehicle	0.124	0.042	0.083	66.53
Medium goods vehicle	0.085	0.038	0.047	55.45
Heavy goods vehicle	0.084	0.035	0.050	59.13
Articulated truck	0.084	0.030	0.054	64.34

Source: ADB project preparatory technical assistance.

8. The typical economic benefits of savings in VOCs and travel time are summarized in Table A2.4. Values of time saving were derived on the basis of GDP per capita. Incomes in the Project area are higher than average as a result of tourism, and GDP per capita in urban areas at purchasing power parity (about \$4 per hour) was taken to be the working wage of a car passenger. For bus passengers, whose share in total bus trips is small, \$3 per hour was assumed to be the working wage.<sup>17</sup> A nonworking trip was assigned 40% of the value of a working trip. For goods traffic, 1 hour saved was estimated to be worth \$0.30.

9. In terms of accident cost, the total value of a fatality was estimated to be \$260,000 and a serious injury was valued at \$64,000. Accident rates per 100 million vehicle-km were estimated at 6 fatalities and 60 injuries with the Project. Existing rates without the Project are 18 fatalities and 112 injuries per 100 million vehicle-km. The decrease in the number of accidents reduces the overall accident costs.

10. The calculated benefits of generated traffic were half of the difference in unit road user costs between the with- and without-Project scenarios, multiplied by the generated traffic volumes.

<sup>17</sup> A separate robustness check was conducted using wage level expressed in US\$ as the basis for computing the value of time savings. This is also consistent with the cost of the Project, also expressed in US\$. As wage level expressed in US\$ is lower than purchasing power parity terms, the value of time savings is reduced. Nonetheless, this robustness check shows that the Project would still deliver substantially positive EIRR over the Project cycle.

## E. Economic Internal Rate of Return

11. An economic evaluation of the Project was undertaken, using the highway development and management 4 (HDM-4) model.<sup>18</sup> The Project was evaluated over 20 years; the first full year of benefits was assumed to be 2022. A residual value of 30% of capital costs was included in the final year of the evaluation period. The results are summarized in Table A2.5. They show that the Project is economically viable, with an estimated EIRR of 16.1% and an estimated net present value (NPV) of \$62.3 million.

**Table A2.5: Detailed Economic Analysis**  
(US\$ million)

Year	Incremental Costs			Road User Cost Savings				Net Benefits	
	Capital	Recurrent	Total	VOC	Time Savings	Generated Traffic	Accident Savings		Total
2017	47.01	0.00	47.01	0.00	0.00	0.00	0.00	0.00	(47.01)
2018	17.21	0.00	17.21	0.00	0.00	0.00	0.00	0.00	(17.21)
2019	42.59	0.00	42.59	0.00	0.00	0.00	0.00	0.00	(42.59)
2020	59.81	0.00	59.81	0.00	0.00	0.00	0.00	0.00	(59.81)
2021	52.82	0.00	52.82	0.00	0.00	0.00	0.00	0.00	(52.82)
2022	0.00	0.03	0.03	0.57	27.32	0.00	7.36	35.25	35.22
2023	0.00	0.03	0.03	3.05	29.70	1.70	7.95	42.39	42.36
2024	0.00	0.03	0.03	3.48	31.27	1.79	8.37	44.91	44.88
2025	0.00	0.03	0.03	3.53	32.38	1.89	8.68	46.47	46.44
2026	0.00	0.03	0.03	3.44	33.46	1.97	8.99	47.86	47.83
2027	1.05	0.09	1.13	3.41	34.55	2.05	9.37	49.38	48.24
2028	0.00	0.03	0.03	5.94	35.71	2.14	9.71	53.50	53.47
2029	0.00	0.03	0.03	6.47	36.70	2.22	10.07	55.46	55.43
2030	0.00	0.03	0.03	6.81	37.51	2.31	10.37	57.00	56.97
2031	0.00	0.03	0.03	7.12	38.32	2.38	10.69	58.50	58.47
2032	0.00	0.03	0.03	7.72	39.22	2.46	11.04	60.45	60.42
2033	0.00	0.03	0.03	8.23	40.13	2.54	11.40	62.31	62.28
2034	1.05	0.09	1.13	9.11	41.03	2.63	11.78	64.55	63.42
2035	0.00	0.03	0.03	5.02	40.26	2.71	12.16	60.16	60.12
2036	0.00	0.03	0.03	4.48	38.93	2.80	12.51	58.72	58.69
2037	0.00	0.03	0.03	4.17	37.04	2.89	12.86	56.95	56.92
2038	0.00	0.03	0.03	4.24	36.25	2.97	13.24	56.70	56.67
2039	0.00	0.03	0.03	4.61	37.24	3.06	13.63	58.55	58.52
2040	0.00	0.03	0.03	5.05	38.28	3.15	14.04	60.52	60.49
2041	(66.21)	0.03	(66.17)	6.59	41.76	3.25	14.70	66.29	132.47
<b>Net Present Value (at 12% discount rate, US\$ million)</b>									62.3
<b>Economic Internal Rate of Return (%)</b>									16.1

( ) = negative, VOC = vehicle operating cost.

Source: ADB estimates.

## F. Sensitivity Analysis

12. The sensitivity analysis assessed the variables to which the estimated EIRR and the NPV of the Project are sensitive. The results are summarized in Table A2.6, showing that the Project's economic viability remains robust under such scenarios.

<sup>18</sup> World Road Association. 2004. *Highway Development and Management Tool (HDM-4)*. Available: <https://www.piar.org/en/knowledge-base/road-assets-management/HDM-4-Software/>.

**Table A2.6: Sensitivity Analysis**

<b>Parameters</b>	<b>EIRR (%)</b>	<b>NPV (US\$ million)</b>	<b>Switching Value</b>
<b>Base Case</b>	16.1	62.3	
a. Benefits less 10%	14.7	40.9	
b. Benefits less 20%	13.4	19.6	-29.4%
c. Capital cost increased by 10%	14.9	47.2	
d. Capital cost increased by 20%	13.8	32.1	+41.2%
e. Combination of a. and c.	13.6	25.9	
f. Traffic growth of -10%	13.0	13.8	
g. Traffic growth of -20%	10.2	(22.6)	
h. One year delay in road opening	14.2	35.92	

( ) = negative, EIRR = economic internal rate of return, NPV = net present value.

<sup>a</sup> Switching Value: the value at which (increase for cost, decrease for benefit) the indicated item will produce an EIRR of 12%.

Source: ADB project preparatory technical assistance.

## G. Risk Analysis

13. Risk analysis estimated the probability of EIRR and NPV would fall below zero using the Monte Carlo method. Input and maximum values have been set as total discounted net benefits for VOC savings, time savings, generated traffic, and accident savings. Maximum values for benefits have been limited to base sensitivity scenario.

**Table A2.7: Risk Analysis**

	<b>Maximum Value (\$ million)</b>		<b>Input Value (\$ million)</b>	
Cost	180.80	Base + 20%	150.67	Base
Net VOC Savings	18.69	Base	14.95	Base -20%
Net Time Savings	144.98	Base	115.98	Base -20%
Net Accident Savings	41.08	Base	24.64	Base -40%
Net Generated Traffic Savings	7.17	Base	5.74	Base -20%

VOC = vehicle operation cost

Source: ADB project preparatory technical assistance.

14. A 20%–40% decrease in all benefits and an increase in the Project cost of 20% resulted in a positive mean value of NPV = \$10.6 million, and a 72% probability the NPV would be within bound values between 0–max. (52.9).

## II. Financial Management

15. The maintenance expenses for the Project road are estimated at \$2,150 per km per year for the economic analysis, and the yearly allocation for routine maintenance for international and secondary roads of \$2,500–3,000 per km will be adequate to maintain the Project road functions without undue damage. The financial management assessment was conducted as part of Project preparation. The capacity of ETCIC, the financial management unit within the RD, was assessed for funds-flow arrangements, staffing, accounting and financial reporting systems, financial information systems, and internal and external auditing arrangements. Originally established as a temporary organization to undertake the financial management of a WB road project according to presidential decree in 1995, ETCIC conducts the financial management for externally funded projects on the RD's behalf. ETCIC has six professional staff members recruited from the market and professionally trained in financial management and accounting, and five

supporting specialists. Its operating expenses are compensated by funds from projects undertaken by ADB, EIB, and WB. Its technical capacity is assessed as satisfactory.

### Annex 3. Sovereign Credit Fact Sheet-Georgia

#### A. Recent Economic Development

1. Georgia is an upper-middle-income country. Growth in Georgia averaged nearly 6% per year during 2004-2013. Since the beginning of 2014, Georgia has been hit by external shocks that have persistent impact. The recession in Russia and slower growth in other trading partners impacted Georgia through lower exports and reduced remittances, particularly from Russia and Greece. Growth further moderated from 4.8% in 2014 to 2.8% in 2015, and the current account deficit widened from 12% of GDP in 2015 to 13% in the first quarter of 2016. A strong depreciation pressure is on the exchange rate, with the Lari depreciating by 29 percent against the US Dollar during 2015. In an effort to support growth, the Government boosted both capital and current spending, thereby widening the fiscal deficit to 2.5% of GDP.

#### B. Economic Indicators

**Selected Macroeconomic Economic indicators (2014-2018)**

<b>Economic Indicators</b>	<b>2014</b>	<b>2015</b>	<b>2016*</b>	<b>2017*</b>	<b>2018*</b>
National income and prices (change %)					
Real GDP	4.8	2.8	3.4	4.0	5.0
CPI inflation (change %)	3.1	4.0	2.0	3.0	
Central government operations (% of GDP)					
General government deficit		2.5			
External debt (% of GDP)		107			
Public debt (% of GDP)	36	42			
Money and credit					
Broad money (average annual growth rate)	13.8	19.2			
Net FDI inflows (% of GDP)					
Gross reserves (months imports)	2.88	2.95			
Current account balance (% of GDP)	-10.6	-12.0			
Exchange rate (Lari/\$, end period)	1.86	2.39			

Note: \* denotes projected figures. CPI = consumer price index; FDI = foreign direct investment  
Source: IMF, WB website and CEIC.

#### C. Economic Outlook and Risks

2. With a significant increase in government spending in the run-up to the October 2016 parliamentary elections, Georgia's medium term growth is projected to reach 5% by 2018, reflecting greater policy certainty in the post-election environment, some recovery in external markets, and continued foreign direct investment inflows. A large current account deficit, high external debt, an increasing fiscal deficit, and continuing high unemployment are the main risks to the economy.

3. On the debt outlook, external debt stayed at 107% of GDP in 2015 and 100% in the first quarter of 2016 due to the persistently high current account deficit and the fact that Georgia, with low domestic savings, relies on foreign inflows to finance its investments. Public debt increased to 42% of GDP in 2015 from 36 % in 2014 because of the valuation effects from the exchange rate depreciation as well as higher

borrowing, with a wider fiscal deficit.<sup>19</sup> Moody's Investors Service changed the outlook to stable from positive on Georgia's government bond ratings in March 2016, due to lower growth and depreciation of the Lari.<sup>20</sup>

---

<sup>19</sup> World Bank Georgia snapshot report, October 2016.

<sup>20</sup> [https://www.moodys.com/research/Moodys-changes-outlook-on-Georgias-Ba3-government-bond-rating-to--PR\\_341706](https://www.moodys.com/research/Moodys-changes-outlook-on-Georgias-Ba3-government-bond-rating-to--PR_341706)

## Annex 4. Risk Assessment and Risk Management Plan<sup>21</sup>

1. ADB conducted a country-level risk assessment for Georgia in 2014 as part of the preparation of its country partnership strategy, 2014–2018.<sup>22</sup> A financial management assessment and procurement risk assessment were conducted for the RD as part of Project preparation. Country-level and project-level risks and their management plans are summarized in Table A4.1.
2. **Procurement.** Georgia’s national procurement system is regulated by the 1999 Law on State Procurement (and subsequent amendments). The establishment of Georgia’s Competition and State Procurement Agency facilitated procurement reform. Recent changes include (i) a strengthened e-procurement system; (ii) mandated disclosure of contract values by procuring entities; and (iii) the inclusion of civil society representatives in dispute resolution procedures. E-procurement has significantly simplified procedures, and allows any person to file an electronic complaint for review by a dispute resolution board. Data on the value of public contracts is maintained in a public procurement database and the treasury information system. Spending unit payment schedules allow access to treasury cash request data. Bidders can download public procurement contract data from the electronic tender system.
3. The national procurement regulations are considered to be well developed and practiced. Generally, all procurement handled by the RD is subject to national procurement law and the procurement guidelines of international financing institutions, if agreed to in loan agreements. Competitive bidding in the road sector has been consistent and generally evident across all projects, with contractors regularly submitting bids that are largely responsive; there were four bidders on average per contract for projects financed by development partners.
4. **Anti-corruption.** Georgia’s anti-corruption regulatory framework is outlined in the 2009 Law of Georgia on the Conflict of Interests and Corruption in Public Service. The Investigative Division of the Prosecution Service is the key anti-corruption body. The Anti-Corruption Interagency Council under the Ministry of Justice is tasked with coordinating anti-corruption efforts. The council comprises high-level officials (supported by a secretariat) along with nongovernmental organizations and private sector representatives. Georgia’s first National Anti-Corruption Strategy and Action Plan was adopted in 2005. Since 2012, the Government has taken steps to restore judicial independence and improve accountability and transparency in public finance, procurement, and private sector oversight. Amendments in 2014 to the Law on Conflict of Interests and Corruption in Public Service seek to improve whistleblower protection, in particular by expanding the channels of reporting, and providing for anonymity and protection.
5. Petty corruption has almost been eliminated. Conflict of interest rules and codes of ethics govern the conduct of public servants. Government officials are required to publicly disclose their income and assets annually. The prospect of sanctions has significantly affected the extent to which public officials shape policies for their own interests. There is a need to institutionalize and consolidate Georgia’s anti-corruption efforts and achievements, however.

---

<sup>21</sup> Source: ADB.

<sup>22</sup> Asian Development Bank. 2014. *Country Partnership Strategy: Georgia, 2014–2018*. Manila.

**Table A4.1. Risks and Mitigation Measures (Country- and Project-Level)**

<b>Risk Description</b>	<b>Rating</b>	<b>Mitigation Measures</b>	<b>Responsibility</b>
<b>Anti-corruption</b> While corruption has been reduced, some concerns regarding corruption remain.	L	ADB will support the Government's anti-corruption initiatives relevant to core sectors to develop stronger policy and regulatory frameworks and enhance government capacity.	Anti-Corruption Interagency Council
<b>Procurement</b> The Procurement Unit under the International Procurement and Donor Reporting Division of the RD has qualified procurement experts, but staff numbers are insufficient to efficiently undertake the procurement required to implement the Project	M	Additional procurement experts will be engaged under the Project to augment relevant RD units in addition to the current permanent and contractual staff involved in procurement functions.  By 2017, the RD, in consultation with the government and relevant institutions (e.g., the State Procurement Agency of Georgia, and national and international training centers) will adopt a long-term capacity development and professionalization program for staff involved in agency procurement transactions to build its long-term procurement capacity.	Roads Department  Roads Department
Document retention policy and record keeping are adequate to enable internal and external audit of procurement processes, but filing facilities and support functions are inadequate to securely organize the transactions in progress.	L	Procurement Unit facilities (including offices and staff work stations) where procurement files (including bid proposals) are temporarily stored, will be expanded and equipped to improve record-keeping infrastructure and document retention and safety.	Roads Department
<b>Financial Management</b> ETCIC's financial management manual may not call for timely updating of project-specific funds flow and disbursement arrangements.	L	During the inception mission, specific action plans will be established for updating of Project-specific funds flows, disbursement arrangements, and other relevant funds-flow mechanisms; these will be monitored throughout Project implementation.	ETCIC
The variance between actual and budgeted disbursements is not properly monitored and reported, which may lead to shortfalls in government counterpart financing.	L	EICIC will submit to ADB the interim unaudited Project financial statements, including planning, actual, and variance amounts of Project costs (including current and cumulative amounts), to enable ADB to assess budget utilization and provide timely alerts to the RD regarding expected shortfalls in government counterpart financing.	ETCIC
<b>Project Implementation</b> The human, technical, and financial resources of the RD are inadequate to manage a rapidly growing portfolio and technically complex projects that require sophisticated highway engineering.	S	The RD hired an international tunnel and bridge engineer for a WB project approved in 2015, and their expertise could be shared for other projects as needed. ADB's new projects include a cost item for project management and institutional support, which will be used for hiring special expertise needed for Project implementation.	Roads Department
Inaction or indifference on the part of land owners with	L	The RD will mobilize social workers far in advance of Project implementation to provide	Roads Department

<b>Risk Description</b>	<b>Rating</b>	<b>Mitigation Measures</b>	<b>Responsibility</b>
regard to legalization of their lands may extend already lengthy land acquisition processes.		direct assistance to land owners to obtain legal status for their lands (i.e., by registering land occupation, proving occupation rights, and obtaining legal ownership rights).	
A small number of affected people may decline relocation and resort to lengthy disputes outside of the grievance redress mechanism, and thereby disrupt construction works.	S	During Project preparation, extensive consultations were held with nongovernmental organizations and local residents to disseminate the legal framework that enables involuntary land acquisition and expropriation for public purposes, and this process will continue during Project implementation. The Adjara court, through grievance cases from the Kobuleti bypass road, has learned the importance of fast-tracking grievance cases and enforcing legal requirements relating to public benefits. The RD will closely coordinate with the law enforcement agencies, and avoid indefinite extension of grievance cases and consequent disruption of construction works.	Roads Department
The local construction industry may not be mature enough to absorb the PBM concept, properly assess risks, and price its services accordingly.	S	The consultancy for PBM design and procurement packaging will assess the contracting industry—especially local and international contractors active in Georgia—in order to evaluate their technical, managerial and financial capacity, and (i) identify potential bidders and their capacity; (ii) establish a basis for defining qualification criteria for bidders; and (iii) identify the weaknesses of likely bidders and ways to mitigate risks linked to those weaknesses. Lessons from the experience of the WB will be incorporated in the design and procurement package.	Roads Department
<b>Sustainability of Road Network</b>			
An inadequate road maintenance budget may jeopardize the sustainability of large investments in the road network, and preservation of road assets.	S	Apart from the joint policy dialogue by development partners to increase the fiscal budget for road maintenance, efforts are also being exerted to (i) reduce the maintenance backlog, particularly for secondary roads, and thereby use limited maintenance resources more productively; and (ii) introduce PBM contracts to spend limited road maintenance resources more efficiently.	MOF, MRDI, and Roads Department

H = high, S = substantial, M = moderate, L = low.

ADB = Asian Development Bank, ETCIC = Eurasian Transport Corridor Investment Center of MRDI, MOF = Ministry of Finance of Georgia, MRDI = Ministry of Regional Development and Infrastructure of Georgia, PBM = performance-based maintenance.

Source: ADB.