Document of
The World Bank

FOR OFFICIAL USE ONLY

Report No: PAD2061

INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT

PROJECT PAPER

ON A

PROPOSED ADDITIONAL LOAN

IN THE AMOUNT OF EUR 16.9 MILLION

AND RESTRUCTURING

TO

GEORGIA

FOR THE

EAST–WEST HIGHWAY CORRIDOR IMPROVEMENT PROJECT

October 16, 2017

Transport & ICT
EUROPE AND CENTRAL ASIA

CURRENCY EQUIVALENTS

Exchange Rate Effective August 31, 2017

Currency Unit	=	Georgian Lari (GEL)
		EURO (EUR)
EUR1	=	US$0.843
US$1	=	GEL2.433

FISCAL YEAR

January 1 – December 31

ABBREVIATIONS AND ACRONYMS

AADT	Average Annual Daily Traffic
ADB	Asian Development Bank
AF	Additional Financing
BP	Bank Procedure
CPS	Country Partnership Strategy
EA	Environmental Assessment
EBRD	European Bank for Reconstruction and Development
ECA	Europe and Central Asia
EIB	European Investment Bank
EIRR	Economic Internal Rate of Return
ESMP	Environmental and Social Management Plan
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan
EU	European Union
EUR	Euro
EWH	East West Highway
EWHC	East West Highway Corridor
EWHCIP	East West Highway Corridor Improvement Project
EWHIP	East West Highway Improvement Project
FDI	Foreign Direct Investment
FPU	Foreign-funded Projects Unit
GEL	Georgian Lari
GHG	Greenhouse Gas
GIF	Global Infrastructure Facility
GOG	Government of Georgia
GRM	Grievance Redress Mechanism
GRS	Grievance Redress Service
HDM-4	Highway Development and Management Tool
IBRD	International Bank for Reconstruction and Development
IFC	International Finance Cooperation
IFIs	International Financial Institutions
ITS	Intelligent Transport Systems
JICA	Japanese International Cooperation Agency
km	kilometer
MESD	Ministry of Economy and Sustainable Development
MRDI	Ministry of Regional Development and Infrastructure
NDC	Nationally Determined Contributions
NPV	Net Present Value
OP	Operational Policy
PDO	Project Development Objectives
POM	Project Operations Manual
PP	Procurement Plan
PPSD	Project Procurement Strategy for Development
PQ	Prequalification
PRAMS	Procurement Risk Assessment Management System
RAP	Resettlement Action Plan
RD	Roads Department
RPF	Resettlement Policy Framework
STEP	Systematic Tracking of Exchanges in Procurement
TOR	Terms of Reference
TRACECA	Transport Corridor Europe-Caucasus-Asia
TRRC	Investment Center of Eurasian Transport Corridor
US$	United States Dollar

Vice President:	Cyril E. Muller
Country Director:	Mercy Miyang Tembon
Senior Global Practice Director:	Jose Luis Irigoyen
Practice Manager:	Juan Gaviria
Task Team Leader:	Mustapha Benmaamar and Nargis Ryskulova

GEORGIA
EAST – WEST HIGHWAY CORRIDOR IMPROVEMENT PROJECT
ADDITIONAL FINANCING AND PROJECT RESTRUCTURING

CONTENTS

List of Annexes

List of Figure

List of Tables

ADDITIONAL FINANCING DATA SHEET

Georgia

East West Highway Corridor Improvement Project Additional Financing (P160152)

EUROPE AND CENTRAL ASIA

Basic Information – Parent			
Parent Project ID:	P149952	Original EA Category:	A - Full Assessment
Current Closing Date:	31-Dec-2020		

Basic Information – Additional Financing (AF)			
Project ID:	P160152	Additional Financing Type (from AUS):	Scale Up
Regional Vice President:	Cyril E Muller	Proposed EA Category:	A – Full Assessment
Country Director:	Mercy Miyang Tembon	Expected Effectiveness Date:	30-April-2018
Senior Global Practice Director:	Jose Luis Irigoyen	Expected Closing Date:	31-Dec-2023
Practice Manager/Manager:	Juan Gaviria	Report No:	PAD2061
Team Leader(s):	Mustapha Benmaamar, Nargis Ryskulova		

Borrower: Georgia				
Organization Name	Contact	Title	Telephone	Email
Roads Department of the Ministry of Regional Development and Infrastructure of Georgia	Zaza Simonia	Deputy Chairman	(995-32) 237-0508 / 215	info@georoad.ge

Project Financing Data - Parent (East-West Highway Corridor Improvement-P149952) (in US$ Million)

Key Dates

Project	Ln/Cr/TF	Status	Approval Date	Signing Date	Effectiveness Date	Original Closing Date	Revised Closing Date
P149952	IBRD-85470	Effective	03-Dec-2015	10-Feb-2016	19-May-2016	31-Dec-2020	

Disbursements

Project	Ln/Cr/TF	Status	Currency	Original	Revised	Cancelled	Disbursed	Undisbursed	% Disbursed
P149952	IBRD-85470	Effective	US$	140.00	140.00	0.00	25.76	114.24	18.40

Project Financing Data - Additional Financing East West Highway Corridor Improvement Project Additional Financing (P160152)(in EUR Million)				
[X] Loan [ ] Grant [ ] IDA Grant [ ] Credit [ ] Guarantee [ ] Other				
Total Project Cost:	109.7	Total Bank Financing:	16.9	
Financing Gap:	0.00			

Financing Source – Additional Financing (AF)	Amount
Borrower	16.9
International Bank for Reconstruction and Development	16.9
European Investment Bank	75.9
Financing Gap	0.00
Total	109.7

Policy Waivers	
Does the project depart from the CAS in content or in other significant respects?	No
Explanation N/A	
Does the project require any policy waiver(s)?	No
Explanation N/A	

Team Composition

Bank Staff

Name	Role	Title	Specialization	Unit
Mustapha Benmaamar	Team Leader (ADM Responsible)	Lead Transport. Spec.		GTI08
Nargis Ryskulova	Team Leader	Transport Specialist		GTI03
Sandro Nozadze	Procurement Specialist (ADM Responsible)	Procurement Specialist		GGO03
Nodar Mosashvili	Financial Management Specialist	Consultant		GGO21
Darejan Kapanadze	Safeguards Specialist	Senior Environmental Specialist	Environmental Safeguards	GEN03
Giang Thanh Huong Le	Team Member	Program Assistant		GTI03
Isabella Micali Drossos	Counsel	Senior Counsel		LEGLE

Luis M. Schwarz	Finance Officer	Senior Finance Officer		WFALN
Militsa Khoshtaria	Team Member	Program Assistant		ECCGE
Natalya Stankevich	Team Member	Sr. Transport. Spec.		GTI03
Robert Mutyaba	Team Member	Transport Specialist		GTI03
Vera Dugandzic	Safeguards Specialist	Senior Operations Officer	Social Safeguards	GSU03

Extended Team

Name	Title	Location

Locations

Country	First Administrative Division	Location	Planned	Actual	Comments
Georgia		Zemo Osiauri			
Georgia		Tbilisi			
Georgia		Sarpi			
Georgia		Samtredia			
Georgia		Rustavi			
Georgia		Ruisi			
Georgia		P'ot'i			
Georgia		Natakhtari			
Georgia		Kutaisi			
Georgia		Kobuleti			
Georgia		Khashuri			
Georgia		Grigoleti			
Georgia		Chumateleti			
Georgia		Choloki			
Georgia		Batumi			
Georgia		Argveta			
Georgia		Aghaiani			
Georgia		Agara			
Georgia		Rikoti Tunnel			

Institutional Data

Parent (East-West Highway Corridor Improvement-P149952)

Practice Area (Lead)

Transport & ICT
Contributing Practice Areas
Additional Financing East West Highway Corridor Improvement Project Additional Financing (P160152)
Practice Area (Lead)
Transport & ICT
Contributing Practice Areas
Consultants (Will be disclosed in the Monthly Operational Summary)
Consultants Required? Consultants will be required

I. Introduction

1. **This Project Paper seeks the approval of the Executive Directors to provide an additional loan in an amount of EUR16.9 million to Georgia and to restructure the East – West Highway Corridor Improvement Project** (P149952, Loan No. 8547-GE). This is in response to the request from the Ministry of Finance of Georgia dated June 29, 2016. The proposed Additional Financing (AF) loan would finance the scaling up and restructuring of the East West Highway Corridor Improvement Project (EWHCIP) to maximize the development impact of the East West Highway Corridor (EWHC) improvement. The restructuring will reflect the increased scope and extend the project closing date. The proposed AF will finance the costs associated with (i) upgrading of the existing section from Chumateleti to Khevi (about 11 km) into a 2-lane dual carriageway, and (ii) the implementation of institutional strengthening activities.

2. **The Project Development Objectives (PDO) will remain the same as in the original project**. The Results Framework and Monitoring Indicators will be revised to: (i) reflect the increased scope of the project by modifying relevant indicators; (ii) introduce one new intermediate level indicator related to road safety; and (iii) align some of the target values and dates in the Results Framework and Monitoring Indicators with the proposed new closing date. There will be no changes to the implementation arrangements. The closing date is proposed to be extended by three years, from December 31, 2020 to December 31, 2023. This Level 2 restructuring does not require modifications of the original PDO, the Bank Guarantee Expiration Date, reliance on alternative procurement arrangements, or safeguard category or the trigger of a safeguard policy.

3. **The total cost of the activities covered under the increased scope is estimated at EUR109.7 million**. In addition to the EUR16.9 million loan from the International Bank for Reconstruction and Development (IBRD), the project will include co-financing from the European Investment Bank (EIB) in the amount of EUR75.9 million, and co-financing from Georgia (the Borrower) in the amount of EUR16.9 million.

II. Background and Rationale for Additional Financing and Restructuring

4. **Original project**. The project in the amount of US$140m was approved on December 3, 2015. The Loan Agreement between Georgia and the IBRD was signed on February 10, 2016, and the project became effective on May 19, 2016. The IBRD loan is co-financed by the Borrower bringing the overall project amount to US$164m. The closing date of the project is December 31, 2020. The project's development objectives are: (i) to reduce road user costs along the East-West Highway Corridor section upgraded under the project; and (ii) to strengthen the capacity of the Roads Department (RD) and the Ministry of Economy and Sustainable Development (MESD) to respectively manage the road network and provide an enabling environment to improve logistics services. To date, there have not been any changes to the original objectives, design, or scope, and the proposed project restructuring will be the first restructuring.

5. **The implementation of the original project has progressed well**. The EWHCIP finances the upgrading of the existing East West Highway (EWH) from Zemo Osiauri – km 5.8 to Chumateleti or Km 14.05 into a 2-lane dual carriageway road section totaling around 8 km. The section runs through hilly

and mountainous terrain with elevations of 600 to 850 m above the sea level. The carriageway will be made of concrete pavement and comprises a reduced central reserve with two westbound and two eastbound lanes. The EWHCIP also supports the implementation of institutional strengthening activities to help the government optimize and sustain the large investment in road infrastructure: development of an Intelligent Transport Systems (ITS) strategy and capacity building of RD's ITS Unit and development and implementation of a logistics strategy.

6. The implementation progress has improved and as of negotiations the project has disbursed US$11 million. The procurement processes for both civil works and institutional strengthening components have progressed significantly. The contract for design review and civil works supervision was awarded on January 9, 2017. The procurement process of the civil works covered also the section financed by the EIB and consisted of pre-qualification and post qualification stages. The civil works comprise of two lots, i.e. lot 1 of approximately 5.8km financed by the EIB and lot 2 of approximately 8km financed by the IBRD. The contract for lot 1 was awarded and signed on September 14, 2017. Lot 2 contract was also awarded and was signed on September 6, 2017. The preparation of the detailed designs and bidding documents for the section between Chumateleti and Khevi is underway and is expected to be completed by November 2017. As of October 2017, the total disbursed amount under the project amounts to US$25.76 million. With the signing of the civil work contracts, nearly 100 percent of the loan proceeds will be committed.

7. **On the institutional side, the Bank team is providing support to the MESD to develop a national logistics strategy and an action plan and to implement a set of priority activities**. The project also supports the feasibility study of logistic centers. In addition to the implementation of specific measures to strengthen the capacity of RD's ITS Unit, priority ITS equipment will be installed on the critical sections of the corridor to improve road safety. This is based on the recommendations of the ITS strategy developed under the Bank financed EWHIP-4.

8. **The Bank's transport engagement in Georgia goes beyond highway infrastructure financing**. Two major technical assistance programs have recently been launched to consolidate the Bank's engagement in the transport sector in Georgia including: (i) support to the Government to identify and assess a range of different business models for engaging with the private sector to operate and sustainably maintain the East-West Highway Corridor using a Global Infrastructure Facility (GIF) project planning grant; and (ii) provision of regional technical assistance to improve freight transit and logistics performance of the Trans-Caucasus Transit Corridor financed by a grant from the China World Bank Group Partnership Facility. The former will consolidate a large engagement of the Bank in the road sector and will help the Government take an informed decision in identifying a sustainable financing mechanism to preserve the East West Highway Corridor; The latter will help develop a corridor performance monitoring tool and address the challenges in the areas of logistics services, supply chain management and in cross-border management.

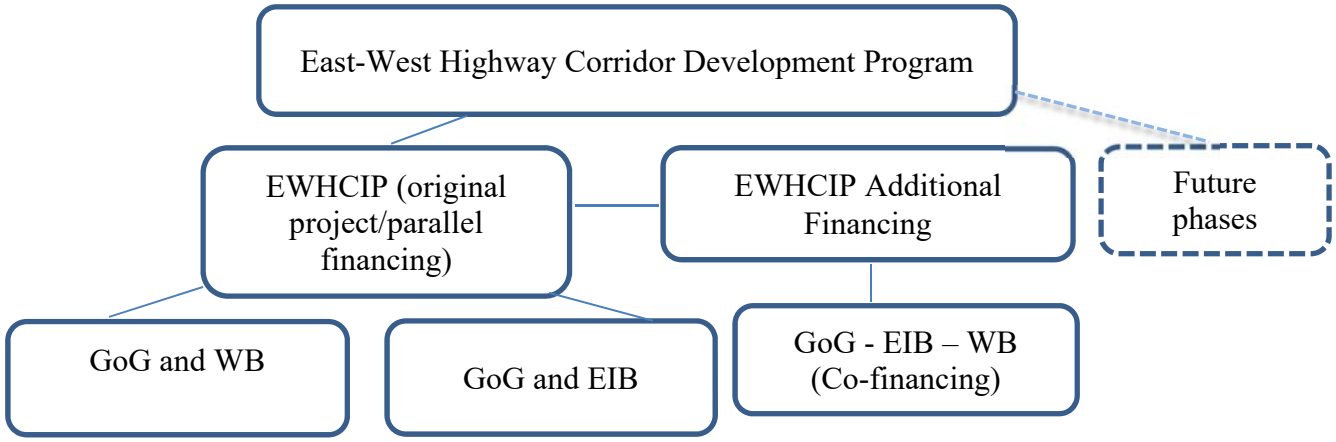
9. **Rationale for the Additional Financing**. The proposed AF supports scaling up of activities initiated under the original project to contribute towards completion of the EWH corridor upgrade and support the RD to ensure the sustainability of road investments. Various options were considered to respond to the Government's request including: (i) *Preparation of a new project.* The proposed additional civil works are the continuation of the previous section covered under the parent project and present the same technical complexity and challenges. (ii) *Reallocation of funds within the original project.* All funds

under the project have been committed and there are no unallocated funds to be considered for reallocation; (iii) *Financing from state budget or other International Financing Institutions (IFIs).* Considering the size of the fiscal effort required to complete the corridor, financing the project by means of the state budget only is not realistic. Three additional IFIs are currently financing the upgrading of the sections from the Western part of the corridor and have also committed to support the financing of other corridor sections as agreed during the government-donors coordination meeting held in January 28, 2016; (iv) Proposed *Additional Financing.* The proposed additional financing to continue road construction is a logical continuation of the ongoing project activities. The IBRD loan represents about 15 percent of the total financing envelope, whereby the Borrower will co-finance another 15 percent, and EIB will co-finance the remaining 70 percent. Considering the above options and constraints, the recommendation is that the proposed AF is the most appropriate instrument. The AF will ensure smooth and efficient scale-up of the ongoing construction works and provide a comprehensive response to improve road management practices and support implementation of important institutional reforms.

10. **This proposed AF is part of a larger East West Highway Corridor Development Program to be completed with the support of development partners**. A feasibility study and value for money analysis of the sections of the EWH not yet upgraded to motorway standards (Chumateleti-Argveta, 51 km,) was conducted in 2015. The study has identified two alternative alignments. These alignments, as depicted in blue and green, are located between Rikoti and Argveta. Blue uses primarily an optimal alignment of the existing road and green uses primarily a green field alignment (Annex 4). The results of the economic analysis show that the blue alignment has higher economic terms and is more affordable for public financing. Construction of the blue alignment (US$1.0 billion) is planned in a series of four sections (F1, F2, F3 and F4), each of average length of 10 km (Annex 4). F0 is the section between Zemo-Osiauri and Chumateleti and is financed under the original project (EWHICP). Section F1 between Chumateleti to Khevi is subject to this proposed AF. The remaining sections (F2, F3 and F4) are proposed to be financed with the support of ADB, EIB and possibly JICA (please refer to Annex 4 for detailed map of the IBRD original and proposed additional financing, and the proposed EWH improvement to be financed by other financiers).

11. **The proposed road section to be financed under this AF is adjacent to the ongoing phase of the East West Highway Development Corridor** which consists of the upgrading of existing 2-lane East-West Highway from Zemo-Osiauri to Chumateleti, totaling 14.05 km**.** EIB is providing parallel financing of the upgrading of the first 5.8 km from Zemo Osiauri to Chumateleti – km 5.8. The World Bank is financing the remaining 8.0 km from Zemo Osiauri – km 5.8 to Chumateleti under the EWHCIP (the original project). This proposed Additional Financing will support the construction of a new dual carriageway from Chumateleti to Khevi (about 11 km), including 11 bridges, one new tunnel and the construction of the second tube of Rikoti Tunnel for the west to east traffic direction (Annex 2). This proposed AF will use a co-financing arrangement between GoG, EIB and World Bank (Figure 1).

Figure 1: Current phase of the highway development program



12. **Rationale for project restructuring.** The project will be restructured to reflect the increased scope and the revised closing date, as well as the resulting changes in the Results Framework and Monitoring Indicators. The PDO is proposed to remain the same as it is defined broadly to reflect improvements in the corridor. One new intermediate indicator will be added which is related to the annual preparation and endorsement of a Road Safety Action Plan aligned with the approved National Road Safety Strategy. This indicator will contribute to strengthening capacity of the Roads Department in road network management. The project closing date is proposed to be extended from December 31, 2020 to December 31, 2023 to allow for the completion of the expanded scope.

13. **Consistency with the Country Partnership Strategy and with institutional goals of reducing poverty and boosting shared prosperity**. Completion of the upgrading of the East West Highway (392 km) to international motorway standards (2x2 lanes) continues to be a high priority for the Government. The project also continues to be in line with the strategic directions identified in the ongoing 2014-2017 Country Partnership Strategy (CPS). The CPS identified two strategic pillars: (i) strengthening public service delivery to promote inclusive growth; and (ii) enabling private sector led job creation through improved competitiveness. The project continues to contribute to both strategic pillars through (i) strengthening the capacity and accountability of the Roads Department in road infrastructure management and maintenance, and (ii) providing infrastructure to facilitate transit transport and growth. The EWHCIP and the AF will enhance transport connectivity, access to markets by reducing travel time as well as transport costs, which directly contributes to the CPS second pillar of improved competitiveness.

14. **Country and sector context**. Economic growth moderated from 2.9 percent in 2015 to 2.7 percent in 2016, largely because of the weak external environment and uncertainty. The geo-political risk emanating from the regional disturbances and the economic slowdown in Georgia's main trading partners, many of which are significantly dependent on Russia and also on hydrocarbons, have had a significant impact on Georgia. The two main direct channels of transmission of the external shock have been lower exports and remittances. The decline in exports has since bottomed out with a slight uptick in the last quarter of 2016 and remittances increased by 4 percent last year. Credit growth during 2016 was 17 percent (20 percent for the private sector), year-on-year, and helped support consumption. In addition, foreign direct investment (FDI) and tourism have remained relatively resilient. Economic growth is projected to average 4 percent a year over the medium-term but downside risks to growth remain. The pick-up in growth in 2017 will largely be driven by high investment and some recovery in the export markets. With the Russian economy inching towards growth in 2017 and an uptick in oil prices, growth in Georgia's trading

partners is likely to increase, raising demand for Georgian exports. The FDI inflows, which largely originated from Azerbaijan and Turkey in 2016, have remained resilient. In the outer years, growth prospects factor in improved economic ties with the European Union (EU). The Deep and Comprehensive Free Trade Area and the Association Agreement with the EU is likely to improve market access and encourage FDI. In 2016, the Government also signed a memorandum of understanding for a free trade agreement with China. Meanwhile the downside risks arise primarily from a protracted period of slowdown among Georgia's trading partners.

15. **There has been progress in poverty reduction and shared prosperity in recent years, largely through higher labor income and redistributive fiscal policy**. The poverty rate, estimated using the $2.5/day PPP poverty line, fell from 46.7 percent in 2010 to 31.5 percent in 2015 and the mean consumption of the bottom 40 grew by 7.5 percent annually in the same period, exceeding the growth enjoyed by the population overall. The poverty rate was estimated to have declined further in 2016, although at a slower pace because of modest economic growth. Inequality in Georgia is higher than in the Europe and Central Asia (ECA) region on average, with a Gini coefficient of 38.5 in 2015. In contrast with previous periods, Georgia has been able to translate economic growth in recent years into poverty reduction. The main channels of transmission have been redistributive social policies and increased earnings, observed across all sectors of activity in the country. Despite the continuous downtrend in poverty in recent years, large urban-rural disparities persist. The vulnerability to fall into poverty is high in Georgia because of the large share of out-of-pocket spending by households on healthcare.

16. **The Government continues to be strongly committed to infrastructure improvement.** The MRDI has developed an Action Plan in 2014 which allocated roughly GEL875 million for infrastructure development, including GEL500 million for road improvements. Investment and management of ports and railways are now undertaken by private operators and Georgian Railways respectively. Government investments have therefore focused on the road sector. The continuation of funding for the East-West Highway corridor improvement is one of the priorities of the Action Plan. This is well aligned with the recently signed Association Agreement with the EU that will open Georgia significantly to the global market.

17. **Georgia aspires to become a regional transport-transit hub, and it offers significant opportunities through its renovated and expanded transportation infrastructure.** This is well aligned with the objective to increase the competitiveness of the Trans-Caucasus Transit Corridor which is a key transit route between Western Europe and Central Asia for transportation of oil and gas as well as dry cargo. The Trans-Caucasus Transit Corridor is part of the international and regional corridors of TRACECA. The TRACECA corridors are the shortest routes between Europe and the Caucasus and Central Asian countries through the Black sea ports. TRACECA corridors are an alternative to the north corridor running through the Russian Federation and Belarus and the southern corridor running through Turkey and Iran, the latter of which is less competitive due to international sanctions imposed on Iran. This puts a particular onus on improving logistics and transport services within Georgia but also across -borders along the Trans-Caucasus Transit Corridor. In the freight transport and logistics sector, significant achievements have been made, however many challenges and bottlenecks remain to position Georgia as a regional transport and distribution hub.

18. **As the EWH carries over 80 percent of the total foreign trade, it is seen as a central piece in the Government's strategy of transforming Georgia into a transport and logistics hub** for

trade between Central Asia and the Far East on the one hand and Turkey and Europe on the other hand. In Georgia, the East-West Highway Corridor (around 400 km) comprises: (i) the E-60 which runs from the Red Bridge's location (border with Azerbaijan) to Poti and (ii) the E-70 which runs from Poti to Sarpi (border with Turkey). It represents 2 percent of the Georgian road network length, and approximately a quarter of the international road network, with an average traffic flow of around 10,000 vehicles per day. The improvement of the EWHC will improve connectivity between the Caspian and the Black Sea, lower the cost of transport and logistics and improve Georgia's ranking and connection to global markets. Moreover, to optimize the benefits of the large investment in transport infrastructure, there is a need to develop a logistics strategy to enhance the business environment through the strengthening of national regulations, improvement of logistics services, and better corridor management.

19. **The EWHC has wider development impacts on Georgia's economy and on regional trade**. Two studies[1] were carried out to provide an analytical foundation to assess the economy wide impact of investment in the EWHC on Georgia's economy and on regional trade. The results show that real GDP is estimated to increase by up to 4.2 percent. The results of the second study show that upgrading the entire East West Highway (EWH) is estimated to generate additional export revenues between US$ 0.8 billion and US$ 1.5 billion. More details on the studies approaches and on the results, are provided in Annex 3.

20. **The Government of Georgia has increased its attention to road safety in the country and approved a new National Road Safety Strategy in July 2016**. The country has seen some improvements in road safety in the past decade, with road fatalities rate declining from 20 fatalities per 100,000 persons in 2008 to 13 fatalities in 2015. However, the situation still remains significantly worse compared to EU countries where the fatality rate per 100,000 persons is as low as 2.8 in Sweden or 3.4 in Netherlands[2]. Road crashes cost Georgia about 1-2 percent of its GDP, with the East-West Highway accounting for about 20 percent of all road crashes. Following the GOG's approval of the new Strategy, a Road Safety Inter-Agency Commission was established comprising mainly deputy ministers, as was a Road Safety Working Group (RSWG), consisting mainly of heads of key stakeholder departments of the respective Ministries and Tbilisi City Hall. In December 2016, the first Road Safety Annual Action Plan for 2017 aligned with the strategic directions of the new Strategy was prepared by the RSWG and endorsed by the GOG.

21. **Climate change is exacerbating natural and environmental vulnerabilities that are already being observed in Georgia**. They range from increased frequency and intensity of floods, flashfloods and landslides in some parts of the country to increased temperature, decreased in precipitation and more frequent heat waves in others. In addition to taking steps to integrate climate risk and resilience into core development planning and implementation nationally, Georgia submitted its Nationally Determined Contributions (NDC) under the United Nations Framework Convention on Climate Change framework in 2015, highlighting their intention to address both climate change adaptation and mitigation and therefore contribute to the global effort to address climate change. On the mitigation side, the country committed to unconditionally reduce its greenhouse gas (GHG) emissions by at least 15 percent below the business-as-usual scenario by 2030, with a possibility to reduce it to 25 percent conditional to international

[1] 1-World Bank, 2015, *Georgia: Assessing Economy Wide Indirect Impacts of East-West Highway Investments through CGE Modeling*, Report ACS15092.
2-World Bank, 2016, *Georgia: Economic Impact of EW Highway Phase 2, Assessing the Impact of the East-West Highway Investments on Exports through Gravity Modeling. Report AUS17153.*

[2] WHO, 2015, *Global Status Report on Road Safety*. Available at:
http://www.who.int/violence_injury_prevention/road_safety_status/2015/en/

assistance. The NDC also outlined a number of areas where the climate change impacts are considered to be most severe, such as the growing frequency and intensity of floods, flashfloods, landslides and mudflows, therefore stressing the need for climate resilience measures.

III. Proposed Changes

22. **Project costing and proposed project components.** The AF Loan from the IBRD will be supplemented by co-financing from the EIB and the Borrower. The overall additional financing envelope is proposed to be EUR109.7 million, including IBRD co-financing in the amount of EUR16.9 million, EIB co-financing in the amount of EUR75.9 million, and Borrower's co-financing in the amount of EUR16.9 million (inclusive of taxes, physical and price contingencies). The proposed AF will scale up existing project components (Components 1, 2 and 3) by financing additional activities. No additional financing is envisaged for Component 4 (see component description below).

Table 1: EWHCIP AF Estimated Project Costs (All Financiers, inclusive of taxes, EUR m)

Components	IBRD co-financing (EURm)	EIB co-financing (EURm)	Borrower co-financing (EURm)	Total Project Financing (EURm)
Component 1: Improvement and Asset Management of the East-West Highway Corridor (including contingencies)	12.6	75.9	16.9	105.3
- Civil Works	8.4	75.9	16.9	101.1
- Technical Supervision (one contract for all co-financiers)	4.2	0.0	0.0	4.2
Component 2: Institutional Strengthening	3.4	0.0	0.0	3.4
Component 3: Project Management including independent audit of project accounts (one consolidated audit for EIB and WB loans)	0.8	0.0	0.0	0.8
Component 4: Preparation of future investments	0.0	0.0	0.0	0.0
Front-end fee (0.25%)	0.04	0.0	0.0	0.0
Total	16.9	75.9	16.9	109.6

23. **Component 1: Improvement and Asset Management of the East-West Highway Corridor (Total cost: EUR105.3m; IBRD: EUR12.6m)**. This component will finance additional works to upgrade the existing 2-lane East-West Highway from Chumateleti to Khevi into a 2-lane dual carriageway road[3]. The section of around 11 km to be upgraded runs through mountainous terrain and

[3] This will also include the construction of the second tube of the Rikoti tunnel.

follows the Rikotula River, bringing the total number of km rehabilitated under the project from 8km to 20km. The carriageway will be made of concrete pavement, similar to adjacent sections. The engineering design will incorporate resilience measures including a slight road realignment to minimize the use of landslide prone areas, slope stabilization, debris prevention, retaining walls, bridges and culverts. Considering applicable design standards for roads of international importance in Georgia and the difficult topographic and geological conditions, the anticipated design speed for this section will be 80 km/h. This component will also finance construction supervision services of the above civil works. Lastly, the construction of the highway section will reduce vehicle operating cost by 10 percent and fuel consumption and lead to increased energy savings for road users, thus reducing the overall country carbon footprint.

24. **Component 2: Institutional Strengthening (Total cost: EUR3.4m; IBRD: EUR3.4m)**. This component will provide additional financing to support the installation of ITS priority equipment and continue strengthening the capacity of RD's ITS Unit in managing ITS systems applications to improve traffic control and road safety, and timely communication with road users along the EWHC. This will also help RD's Monitoring Unit to assess and inform the general public and beneficiaries about the impacts of improving the EWHC. This component will also contribute to the GOG's efforts in the preparation of annual Road Safety Action Plans aligned with the strategic directions of the newly approved Road Safety Strategy.

25. **Component 3: Project Management (Total cost: EUR0.8m; IBRD: EUR0.8m)**. RD will require project management to support implementation of a growing road investment program. Considering the technical complexity of the project, this component will provide additional financing towards the mobilization of relevant technical expertise (i.e. project management; bridge, tunnel and geotechnical engineering) to support the management of the RD and the Foreign-funded Projects Unit (FPU) under it during project implementation. This component will also contribute to building the technical capacity of RD.

26. **Component 4: Preparation of future investments (Total cost: EUR0.00m; IBRD: EUR0.00m)**. No additional financing is envisaged for this component.

27. **Institutional arrangements and capacity issues.** The institutional and implementation arrangements will remain the same as in the original project. The increased scope of the project will put an additional burden on the RD, whose capacity is already stretched. In order to ensure smooth implementation of the project and strengthen the technical capacity of the RD in implementing such big and technically challenging projects, the project envisages the procurement of Project Management Consultants to help the RD with day-to-day management of the project from the technical point of view. The Project Operations Manual (POM), prepared for the original project, which lays down all institutional and implementation arrangements in details, will be updated for the purposes of the AF. The EIB, which is currently the parallel financier of the original project, will become the co-financier of the proposed AF. The Bank's procurement, as well as social and environmental safeguard policies will apply to the entire section, and will extend to co-financing by the EIB and the Borrower. The POM will be updated accordingly before the effectiveness of the AF loan.

28. Institutional capacity of the RD for managing environmental and social safeguards is satisfactory. The capacity for managing social aspects has seen major improvements. The RD has been demonstrating commitment in addressing social safeguard requirements and applying necessary mitigation

measures. In January 2017, the resettlement division within the RD was split from the environment division and both became stand-alone divisions. The newly established resettlement division is fully staffed with an adequate mixture of skills and experience, not only managing the Bank-funded projects but also those of other IFIs (ADB, EIB, JICA). Currently, there are seven civil servants and seven consultants working in the resettlement division, which is assessed as sufficient. The environment division needs further strengthening. This unit has fewer staff units: two managerial and two technical, plus two consultants. Out of two technical positions of environmental specialists one is held by a newly recruited young staff and another remains vacant. It has to be filled with an experienced professional in the field to ensure sufficient capacity of the RD in general, and good environmental performance under the Bank-financed operation in particular. Both the environment and the resettlement divisions are under the purview of a Deputy Chairman for procurement and safeguards.

IV. Appraisal Summary

A. Economic analysis

29. **Using the project cost estimated during the feasibility study, the results of the economic analysis show that project section (Chumateleti-Khevi) is satisfactory** with an Economic Internal Rate of Return (EIRR) of 14.7 percent, Net Present Value (NPV) of GEL53.2 million, at a discount rate of 12 percent. The EIRR for the overall segment (F0, F1, F2, F3 and F4) between Rikoti Tunnel and Argveta is 13.5 percent. The results of the economic analysis are presented in the table below.

Table 2: Results of the economic analysis

	Chumateleti-Khevi (F1)	Rikoti-Argveta (F0+F1+F2+F3+F4)
Economic Internal Rate of Return, EIRR (%)	14.7%	13.5%
Net Present Value, NPV (GEL million)	53.2	222.6

30. **A sensitivity analysis was carried out to assess the robustness of the results to possible variations in key project parameters**, which in this case were identified as construction costs and the forecasted traffic at opening of the project road. The scenario with construction costs increased by 10 percent and traffic at the opening of the project road decreased by 10 percent shows a marginal return for the project with an EIRR of 10.9 percent. Details of the alternative alignment and the economic analysis are provided in Annex 2. The results of the economic analysis will be revised based on the final cost of the civil works that will be derived from the detailed engineering design.

Table 3: Results of the sensitivity analysis

Base Case	14.7%
Construction Costs + 20%	13.0%
Traffic at Opening - 20%	11.7%
Construction Costs + 10% and Traffic at Opening -10%	10.9%

31. **Public sector financing and World Bank value added**. A feasibility study of the East West Highway sections from Zemo-Osiauri to Argveta (around 60 km) (Annex 4) was extended to include a Value for Money analysis and the results show that public sector financing together with support from development partners is the most viable financing strategy. The private sector financing option for the construction of the section is not financially viable due to the high unit cost (US$14.0 million/km or

EUR11.8 million/km) and relatively low traffic volumes (9,600 AADT) which would require significant government financial support for construction. However, the Value for Money analysis and a more practical approach show that private sector participation could be considered under the Operation and Maintenance concession scheme supported by toll revenues. A study to assess various Maintenance and Operation business models is currently ongoing using GIF funds. The Bank is also providing support to Georgia to move from a project to a corridor approach by developing a national logistic strategy and by assessing the performance of the Trans-Caucasus Transit Corridor. The objective is to address the challenges in the areas of logistics services, supply chain management and in cross-border management.

B. Technical

32. **This proposed AF will support the construction of a new dual carriageway of about 11 km highway section that starts at the end of the EWH section covered by the original project (EWHCIP**) that ends at the entrance of the Rikoti Tunnel at Chumateleti. The Chumateleti-Khevi section starts at the eastern part of the existing Rikoti tunnel and ends near the village of Khevi. The section includes 11 bridges and one new tunnel and the construction of the second tube of Rikoti Tunnel for the west to east traffic direction. This is to complement the existing tube for the east-west direction. Construction of the new tunnels and other structures in difficult topographic and geological conditions will require a thorough traffic management plan to avoid traffic interruption, as there is no alternative road in that area (Annex 2).

33. **The project design incorporates climate resilience measures**: As part of the project detailed engineering design, geological surveys and analysis were conducted on the terrain of the Zemo-Osiuari to Chumateleti road section (previous section). The results show deeply weathered thickness soil and highly weathered rock with residual clay. This terrain is prone to frequent landslides. The Chumateleti -Khevi section presents the same geological conditions. In addition, a large part of the road alignment follows the Chumateleti river bank which floods during heavy rains. Therefore, similar climate resilience measures as for the previous section are being incorporated in the detailed engineering design, including a slight road realignment to minimize the use of landslide prone areas, slop stabilization, debris prevention, retaining walls, bridges and culverts. The cost estimate of the resilience measures of the Zemo-Osiuari-Chumateleti section is estimated at USD 10.7 million or around 5 percent of the total construction cost.

C. Financial Management

34. **The proposed Project will rely on the existing FM system,** which includes: (i) significant experience of TRRC FM staff in implementing Bank-financed projects for the past several years; (ii) adequate accounting software utilized by the TRRC; (iii) FM arrangements similar to the on-going projects currently being implemented by the TRRC and found to be adequate. Current audit reports show an unqualified opinion, and management letters found no major issues on the projects' financial statements. Depending on the TRRC financial team's workload they might need to hire an additional disbursement specialist. It has been agreed that prior to project effectiveness the TRRC will update the on-going projects' Financial Management Manual (FMM) to reflect the activities of this Additional Financing. This is a capacity building action and not a condition.

35. **The Treasury's foreign currency account at the National Bank of Georgia (NBG) will also be used for holding the project's DA**. In addition, the country's budget system will be used for this project. For all other FM elements, the TRRC's respective systems are going to be used for this project. These FM arrangements are satisfactory and will remain in place during the project implementation.

36. The Financial Management (FM) arrangements of the TRRC have been reviewed periodically as part of the on-going projects' implementation support missions, as well as during the FM assessment of the Project in February 2017, and have been found satisfactory. The FM arrangements of the project are going to be practically the same as for the original EWHCIP, implemented by TRRC, which is acceptable to the Bank.

D. Procurement

37. **Procurement under the project will be undertaken in accordance with the World Bank Procurement Regulations (Procurement in Investment Project Financing – Goods, Works, Non-Consulting and Consulting Services) – July 2016.** The standard procurement documents are available online. The selection process for the design review and supervision of civil works is underway and is at contract negotiations stage. This follows the procedures outlined in the World Bank Consultants Guidelines of July 2014, as this assignment is partly financed by the ongoing EWHCIP.

38. **The RD, through its FPU, will be responsible for all procurement functions under the project. Procurement arrangements will remain unchanged as compared with EWHCIP.** This is the first investment lending project in Georgia guided by the New Procurement Framework, which poses a considerable risk in terms of luck of practical experience in actual implementation. In addition, taking into account recent staff turnover and heavy workload of the existing staff, the Procurement Risk Rating is assessed as "Substantial". There is a need to maintain qualified staff and further enhance their qualifications to mitigate the procurement risks. The RD has applied considerable efforts to strengthen procurement capacity and to bridge the capacity gap, has hired an additional procurement consultant, who possesses around 10 years of extensive procurement related experience in Bank financed projects. This is a positive step towards building sustainable in house procurement capacity. The risk rating is likely to be reduced to "moderate" during project implementation based on actual performance.

39. **The main package to be procured is for the construction of new dual carriageway (about 11 km) section between Chumateleti-Khevi, estimated at around EUR101 million**. The RD has recommended using Request for Bids procurement method with international publication and with post qualification to expedite procurement process. Packaging of the mentioned contract will be decided after finalization of detailed design and prior to launching the procurement process.

40. **The New Procurement Framework requires the RD to develop a Project Procurement Strategy for Development (PPSD)**. The PPSD is prepared. The PPSD addresses how procurement activities support the development objectives of the project and deliver the best Value for Money under a risk-based approach. It provides adequate justification for the selection methods as defined in the Procurement Plan (PP). The draft PP dated September 20, 2017 is approved by the Bank. It has to be noted that as of the negotiations date, the PP is in MS Excel format. Once the project is switched to the STEP (Systemic Tracking of Exchanges in Procurement) system, the PP will be sent for the Bank's review through the STEP. The PPSD will also form part of the updated POM.

41. **To improve procurement efficiency, the following additional risk mitigation measures are proposed**: (i) Applicability of new procurement framework required using new World Bank Procurement System – STEP. This new procurement tracking system will allow better monitoring of timeliness, provide benchmarking, inform performance metrics and support open data practices. STEP will add transparency and efficiency not only to the procurement process but also to the contract management

process; (ii) the Bank team in close cooperation with the State Procurement Agency of Georgia is assessing current Georgian E-Government Procurement System (Ge-GP) to be used for Open Competitive bidding with international publication, including tender for upgrading of the existing East West Highway (EWH) from Chumateleti to Khevi into a 2-lane dual carriageway. Decision will be reached prior to tendering the above package; (iii) In the unlikely event that decision is not reached with regards to using the e-procurement system for Open Competitive Bidding, bidding documents will be uploaded on the website of the RD as well as on the procurement portal (www.spa.ge), including editable versions (word, excel). This measure is intended to mitigate the risk of collusion/coercion in a way the e-procurement system does.

E. Social (including safeguards)

42. **Social safeguards.** Based on the results achieved under the past and ongoing EWHIPs, the AF activities are expected to make a positive impact on the livelihoods of local population residing in the Chumateleti-Khevi area. The continuation of transport improvement services would further expand access to markets, employment and social services and ensure safer travel with reduced travel costs and time. Better transport connectivity and accessibility will contribute greatly to improvement of economic and social conditions of local people.

43. **The Project triggers OP/BP 4.12 on Involuntary Resettlement**. The true nature of social impact in terms of land acquisition and resettlement is still unknown as the preparation of the detailed engineering design and development of the Resettlement Action Plan (RAP) are ongoing. However, based on a deskwork and the ESIA findings, the selection of the 11 km long "blue" route alignment from Chumateleti to Khevi is expected to minimize adverse social impact and is considered to be low to moderate. There are no villages located in the immediate proximity to the existing 2-lane road section from Chumateleti to Khevi as it runs mainly through mountainous terrain and sparsely populated area. However, some physical displacement could be needed. The ESIA findings indicate that construction works might cause economic displacement of several roadside vendors and operating businesses (seven restaurants/cafe shops) as well.

44. **In the absence of the detailed designs, the Resettlement Policy Framework (RPF) developed under the original EWHCIP has been updated** to reflect some changes in the legal regulation framework on land acquisition (new regulation on cadaster plotting and sporadic surveys) and also the AF project specifics for the Chumateleti-Khevi road section. The updated RPF document was re-disclosed in-country and through the Bank's external website on April 5 and April 6, 2017, respectively. It will serve as a guiding resettlement instrument in providing the needed legally binding obligation for the Borrower to comply with the Bank's Operational Policy 4.12 on Involuntary Resettlement including preparation of the RAP, the draft of which is expected by November 2017.

45. **Based on the experience with the past and ongoing EWHIPs, labor influx is expected to be low**. Also, based on the past and current practice, the impact of workers' camps on local population is assessed to be low as there was no major influx of external workers reported and the duration of the construction process is relatively limited. Practice in Georgia shows that instead of constructing a new workers' camp, existing facilities located away from residential and environmentally sensitive locations have been used as locations for workers' camps, such as the facility and structures in the vicinity of the Rikoti tunnel entrance. With such low impact expected, a well-prepared ESMP, functioning grievance redress mechanism (GRM), and regular monitoring and reporting (as is the case currently) will all serve to address and mitigate potential risks. The ESMP document combines all relevant information and preventive

and mitigation measures related to workers' accommodation as well as health and safety issues of local population. In addition, the client will need to ensure that the contract bidding for construction works and other relevant documents specifically require the preparation of a worker's code of conduct (e.g. to mitigate any negative safety or health risks for local residents). The ESIA notes good practice for the client to follow the provisions of the guidance note by the IFC and the EBRD on Workers' Accommodation: Processes and Standards (Annex I: Checklist on worker's accommodations is integrated in the ESIA document). The contractor will be monitored to verify that good practices on accommodation are being respected.

46. **Though no incidents of any kind of workers' misconduct towards local residents have been reported to date, it is important to carry out awareness and health education program for workers and local communities.** This should combine information on sanitation, health risks, HIV/AIDS prevention and work safety measures. The implementation of these by the construction company shall be closely monitored by the supervisor and the RD staff.

47. **Gender and Citizen Engagement.** The RD has a good track record of successfully engaging with the local population, taking their feedback on board, and reflecting their needs and priorities in the finalization of detailed design to minimize negative social impacts. Public consultations have been held during the ESIA preparation and will be continued for the development of, and throughout implementation of, the RAP. Consultation meetings will take into account the views of both men and women enabling them to express their transport needs, constraints and preferences and will communicate back to the road users the actions based on their feedback. The upgraded road section will provide equal opportunities to both males and females, boys and girls in better transport connectivity, reduced travel costs and time and improved access to social infrastructure, jobs and markets. Findings of the public meetings/hearings along with resulting mitigation measures will be incorporated in the RAP to restore the livelihoods of affected people. Activities aimed at citizen engagement and beneficiary feedback will be further mainstreamed during the project implementation and evaluation mainly through the RAP implementation and monitoring. Additionally, the grievance redress mechanism is in place to address any potential complaints. Beneficiary feedback will be also monitored through annual road users' satisfaction surveys (in a gender-disaggregated manner). These surveys will also ask beneficiaries about their satisfaction with the responsiveness of the GRM. The indicator of which has been included in the Results Framework of the EWHCIP and will be tracked and monitored in the AF as well.

F. Environment (including safeguards)

48. **Similar to the original project, the proposed AF is classified as environmental Category A.** It triggers the same safeguard policies of the World Bank and institutional arrangements for safeguards application by the Borrower will be applied. The most challenging aspects of good environmental performance during construction of Chumateleti-Khevi section of the EWH include identification of suitable locations for the disposal of excess material to be generated during tunnel drilling, and finding adequate options for harmonizing of the developed infrastructure with the natural environment that would include stabilization and re-vegetation of slope cuttings. Environmental due diligence was applied to the preparation and start-up of EWHCIP, and no safeguard-related issues have been observed to date. A broader picture of the RD's environmental performance under the East West Highway Improvement Program, that originated years ago, reveals positive dynamics: the institutional capacity of RD for environmental management improved over time through the restructuring of this institution several times. However, dependency on the services of consultant companies undertaking technical supervision of works being performed by the RD's contractors continues to be significant, and that includes environmental

monitoring of construction works. Environmental rating of the completed and ongoing EWHIPs has been predominantly Satisfactory, occasionally dropping to Moderately Satisfactory.

49. At present, there is a self-standing institutional unit handling environmental aspects of the RD's operation, but its current staffing is inconsistent with the scope of RD's environmental work defined by multiple donor-financed projects, the Government's 5-year rolling Program for the Improvement and Preservation of the Secondary Road Assets, as well as the regular operation and maintenance works countrywide. As a minimum, RD needs to fill in the vacant position of an environmental specialist with a mature and experienced professional of the field and keep supplementing capacity of its rather small environment division with individual consultants hired based on needs under individual projects.

50. **The ESIA for the EWH section to be covered under the AF (Chumateleti-Khevi) was carried out by a consulting firm hired under the EWHIP-4.** The draft ESIA report was submitted to the Bank on January 25, 2017. Following the Bank's review, the draft was revised and disclosed in-country on February 17, 2017 and through the Bank's external website on March 2, 2017. Public consultations first – on the draft TOR for ESIA and later – on the draft ESIA report were held on May 6, 2016 and on March 10, 2017, respectively, and the updated ESIA report was re-disclosed in country and through the Bank's external website on April 5, 2017. The Executive Summary of the draft ESIA report was submitted to the Board of Executive Directors on March 21, 2017.

V. World Bank Grievance Redress

51. **Communities and individuals who believe that they are adversely affected by a World Bank-supported project may submit complaints to existing project-level grievance redress mechanisms or the WB's Grievance Redress Service (GRS).** The GRS ensures that complaints received are promptly reviewed in order to address project-related concerns. Project-affected communities and individuals may submit their complaint to the WB's independent Inspection Panel which determines whether harm occurred, or could occur, as a result of WB non-compliance with its policies and procedures. Complaints may be submitted at any time after concerns have been brought directly to the World Bank's attention, and Bank Management has been given an opportunity to respond. Information on how to submit complaints to the World Bank's corporate Grievance Redress Service (GRS), is available on the following link: http://www.worldbank.org/GRS. For information on how to submit complaints to the World Bank Inspection Panel, please visit www.inspectionpanel.org.

Summary of Proposed Changes	
Overall, no significant changes are expected to be part of the project restructuring. The project will be restructured to reflect the increased scope and the revised closing date in the Results Framework and Monitoring Indicators. The Project Development Objectives will remain the same. The project closing date is proposed to be extended from December 31, 2020 to December 31, 2023.	
Change in Implementing Agency	Yes [ ] No [X]
Change in Project's Development Objectives	Yes [ ] No [X]
Change in Results Framework	Yes [X] No [ ]
Change in Safeguard Policies Triggered	Yes [ ] No [X]
Change of EA category	Yes [ ] No [X]
Other Changes to Safeguards	Yes [ ] No [X]
Change in Legal Covenants	Yes [ ] No [X]
Change in Loan Closing Date(s)	Yes [X] No [ ]
Cancellations Proposed	Yes [ ] No [X]
Change in Disbursement Arrangements	Yes [ ] No [X]
Reallocation between Disbursement Categories	Yes [ ] No [X]
Change in Disbursement Estimates	Yes [X] No [ ]
Change to Components and Cost	Yes [X] No [ ]
Change in Institutional Arrangements	Yes [ ] No [X]
Change in Financial Management	Yes [ ] No [X]
Change in Procurement	Yes [X] No [ ]
Change in Implementation Schedule	Yes [X] No [ ]
Other Change(s)	Yes [ ] No [X]

Development Objective/Results
Project's Development Objectives
Original PDO
The proposed PDOs are to: (i) reduce road user costs along the East-West Highway Corridor section upgraded under the project; and (ii) strengthen the capacity of the Roads Department and the Ministry of Economy and Sustainable Development to respectively manage the road network and provide an enabling environment to improve logistics services.
Change in Results Framework

Explanation:

The Results Framework and Monitoring Indicators are proposed to be revised to: 1) reflect the increased scope of the project; and 2) align some of the target values and dates in the Results Framework with the proposed new closing date.

Compliance

Covenants - Additional Financing (East West Highway Corridor Improvement Project Additional Financing - P160152)

Source of Funds	Finance Agreement Reference	Description of Covenants	Date Due	Recurrent	Frequency	Action
IBRD	Schedule 2, Section I, A. 1.	The Borrower, through RD, shall be responsible for the overall coordination and oversight of the Project implementation. To that end, the Borrower shall provide RD with the resources and staff necessary for implementing the Project.		☒	Yearly	New
IBRD	Schedule 2, Section I, A. 2.	The Borrower, through RD, shall maintain, throughout the implementation of the Project, a Foreign Project Unit (FPU), with a composition, terms of reference, and resources, satisfactory to the Bank.		☒	Yearly	New
IBRD	Schedule 2, Section I, A. 3.	The Borrower, through MRDI, shall: (a) operate and maintain the TRRC with a composition, terms of reference, and resources, satisfactory to the Bank; and (b) ensure that the financial management responsibilities under the Project is carried out by TRRC in accordance with the Project Implementation Agreement.		☒	Yearly	New
IBRD	Schedule 2, Section I, A. 4.	Without limitation to the provision of Section 5.03 of the General Conditions, the Borrower shall ensure that adequate budgetary resources are made available for the Project in the Borrower's annual budgets in respect of each year of Project implementation, in a manner acceptable to the Bank.		☒	Yearly	New
IBRD	Schedule 2, Section I, B. 1.	Without limitation to the provisions of Article V of the General Conditions, the Borrower, through RD, shall: (a) carry out the Project in accordance with the Project Operations Manual (POM); and (b) not amend, revise or waive, nor allow to be amended, revised or waived, the provisions of said POM or any part thereof without the Bank's prior written consent.		☒	Yearly	New
IBRD	Schedule 2, Section I, C.	For purposes of coordinating the implementation of the Project, MESD, RD, and TRRC shall		☒	Yearly	New

		amend and maintain their respective Project Implementation Agreement, satisfactory to the Bank, which shall include, inter alia, the obligations set forth under this Schedule as applicable to RD, MESD and TRRC, respectively.				
IBRD	Schedule 2, Section I, D. 1.	The Borrower, through RD, shall ensure that the Project is implemented in accordance with the provisions of the ESIA, the ESMP, the RPF, and RAP(s) in a manner satisfactory to the Bank.		☒	Yearly	New
IBRD	Schedule 2, Section I, D. 2.	The Borrower shall not abrogate, amend or waive, or permit to be abrogated, amended or waived, the ESIA, the ESMP, the RPF or the RAP(s) or any provision thereof, without prior approval in writing by the Bank.		☒	Yearly	New
IBRD	Schedule 2, Section I, D. 3.	For works under the Project, if it is determined that Resettlement is involved, the Borrower, through RD shall:(i) prior to the carrying out of any said works, prepare and furnish to the Bank, a RAP acceptable to the Bank; (ii) disclose and carry out consultations for said RAP(s); and (iii) thereafter, implement said RAP(s) in accordance with its terms and in a manner acceptable to the Bank.		☒	Yearly	New
IBRD	Schedule 2, Section I, D. 4.	The Borrower through the RD, shall: (a) maintain satisfactory terms of reference in respect of any consultancy in connection with the Project following the Bank's review thereof and; (b) ensure that such terms of reference duly incorporate the requirements of the Bank's Safeguards Policies then in force, as applied to the advice conveyed through such technical assistance.		☒	Yearly	New

Conditions

Source Of Fund	Name	Type
IBRD	Project Operations Manual	Effectiveness

Description of Condition

The Borrower, through RD, has submitted to the Bank an updated Project Operations Manual in form and substance acceptable to the Bank.

Source Of Fund	Name	Type
IBRD	Project Implementation Agreement	Effectiveness

Description of Condition

The Project Implementation Agreement between MESD, RD, and TRRC has been updated by the parties thereto in a manner acceptable to the Bank.

Source Of Fund	Name	Type
IBRD	Independent Auditors	Effectiveness

Description of Condition

The terms of reference for the independent auditors referred to in Section 5.09(b)(i) of the General Conditions have been prepared in form and substance satisfactory to the Bank and the Bank has given its no-objection on said terms of reference.

Risk

Risk Category	Rating (H, S, M, L)
1. Political and Governance	Moderate
2. Macroeconomic	Moderate
3. Sector Strategies and Policies	Moderate
4. Technical Design of Project or Program	High
5. Institutional Capacity for Implementation and Sustainability	Substantial
6. Fiduciary	Substantial
7. Environment and Social	High
8. Stakeholders	Low
9. Other	
OVERALL	Substantial

Finance

Loan Closing Date - Additional Financing (East West Highway Corridor Improvement Project Additional Financing - P160152)

Source of Funds	Proposed Additional Financing Loan Closing Date
International Bank for Reconstruction and Development	31-Dec-2023

Loan Closing Date(s) - Parent (East-West Highway Corridor Improvement - P149952)

Explanation:

The closing date of the original loan is proposed to be extended by three years, from December 31, 2020 to December 31, 2023, to reflect on the increased scope of the project activities.

Ln/Cr/TF	Status	Original Closing Date	Current Closing Date	Proposed Closing Date	Previous Closing Date(s)
IBRD-85470	Effective	31-Dec-2020	31-Dec-2020	31-Dec-2023	

Change in Disbursement Estimates (including all sources of Financing)

Explanation:

Disbursement estimates are proposed to be changed to reflect the IBRD AF Loan of EUR16.9 million. Total IBRD financing for the project will be EUR134.9 million, including the original loan of USD140 million (equivalent to EUR 118 million based on exchange rate dated August 31, 2017) and the proposed AF loan of EUR16.9 million.

Expected Disbursements (equivalent to EUR Million)(including all Sources of Financing)

Fiscal Year	2017	2018	2019	2020	2021	2022	2023	2024		
Annual	8.4	16.9	16.9	16.9	25.3	25.3	25.3	0.00		
Cumulative	8.4	25.3	42.2	59.0	84.3	109.6	134.9	134.9		

Allocations - Additional Financing (East West Highway Corridor Improvement Project Additional Financing - P160152)

Source of Fund	Currency	Category of Expenditure	Allocation	Disbursement %(Type Total)
			Proposed	Proposed
IBRD	EUR	Component 1: Improvement and asset management of the East-West Highway Corridor	12.6	0.00
IBRD	EUR	Component 2: Institutional Strengthening	3.4	0.00
IBRD	EUR	Component 3: Project Management	0.8	0.00
IBRD	EUR	Component 4: Preparation of future investments	0.00	0.00
IBRD	EUR	Front-end fee (0.25%)	0.04	0.00
		Total:	16.9	
EIB	EUR	Component 1 Improvement and asset management of the East-West Highway Corridor	75.9	0.00
EIB	EUR	Component 2: Institutional Strengthening	0.00	0.00
EIB	EUR	Component 3: Project Management	0.00	0.00
EIB	EUR	Component 4: Preparation of future investments	0.00	0.00
		Total:	75.9	
Borrower	EUR	Component 1: Improvement and asset management of the East-West Highway Corridor	16.9	0.00
Borrower	EUR	Component 2: Institutional Strengthening	0.00	0.00

Borrower	EUR	Component 3: Project Management	0.00	0.00
Borrower	EUR	Component 4: Preparation of future investments	0.00	0.00
		Total:	16.9	

Components

Change to Components and Cost

Explanation:

The increased scope of the project will introduce additional activities to Components 1, 2, and 3. No changes and no additional financing is envisaged for Component 4.

Current Component Name	**Proposed Component Name**	**Current Cost (US$M)**	**Proposed Cost (US$M)**	**Action**
Component 1: Corridor Improvement	Component 1: Improvement and asset management of the East-West Highway Corridor	158.50	283.45	Revised
Component 2: Institutional strengthening	Component 2: Institutional strengthening	2.00	6.00	Revised
Component 3: Project management support	Component 3: Project management	0.50	1.50	Revised
Component 4: Preparation of designs and supporting studies for future projects for the development of the East-West Highway	Component 4: Preparation of future investments	3.00	3.00	No changes
IBRD	Front-end fee (0.25%)	0.00	0.05	New
	Total:	164.00	294.00	

Other Change(s)		
Implementing Agency Name	**Type**	**Action**
Roads Department of the Ministry of Regional Development and Infrastructure		No changes

Change in Procurement

Explanation:

Procurement under the proposed Additional Financing will be undertaken in accordance with Procurement Regulations for Borrowers – Procurement in Investment Project Financing – Goods, Works, Non-Consulting and Consulting Services – July 2016 and respective standard procurement documents. The New Procurement Framework requires the Borrower to develop a Project Procurement Strategy for Development (PPSD), which the Borrower has developed. The PPSD addresses how procurement activities will support the development objectives of the project and deliver the best Value for Money (VfM) under a risk-based approach.

Change in Implementation Schedule

Explanation:

The closing date of the original loan is proposed to be extended by three years. Although the duration of activities financed under the original loan are not expected to go beyond the original implementation timeframe, due to the increased scope, the implementation schedule will be adjusted accordingly. Both loans, the original loan and the proposed additional financing loan, are suggested to close on December 31, 2023.

Appraisal Summary

Economic Analysis

Explanation:

Please refer the appraisal summary in the main text of the Project Paper, Section IV / A

Technical Analysis

Explanation:

Please refer the appraisal summary in the main text of the Project Paper, Section IV / B

Social Analysis

Explanation:

Please refer the appraisal summary in the main text of the Project Paper, Section IV / E

Environmental Analysis

Explanation:

Please refer the appraisal summary in the main text of the Project Paper, Section IV / F

Risk

Explanation:

Overall risk rating. The overall risk rating of the project with the proposed AF is proposed to be kept Substantial.

Technical Design of Project or Program. This risk is rated High. Similarly to the original project, the technical complexity of the additional activities financed out of the proposed AF will bring additional risks in terms of technical design and civil works implementation. To mitigate the risk, the Government decided – in agreement with the project team – that the supervision consultant, responsible for the supervision of the civil works, would also be responsible for the technical review of the Detailed Design during its preparation. In addition, the RD will be supplemented by a Project Management Consultant, who would bring relevant technical expertise to help the RD with day to day project implementation.

Fiduciary risk and Institutional Capacity for Implementation and Sustainability. This risk is assessed as Substantial. From the procurement perspective, this is the first investment lending project in Georgia guided by the New Procurement Framework, which poses a considerable risk in terms of luck of practical experience in actual implementation. In addition, taking into account recent staff turnover and heavy workload of the existing staff, the Procurement Risk Rating is assessed as "Substantial". There is a need to maintain qualified staff and further enhance their qualifications to mitigate the procurement risks. The RD has applied considerable efforts to strengthen procurement capacity and to bridge the capacity gap, has hired an additional procurement consultant, who possesses around 10 years of extensive procurement related experience in Bank financed projects. This is a positive step towards building sustainable in house procurement capacity. The risk rating is likely to be reduced to "moderate" during project implementation based on actual performance. As of the negotiations stage, the risk remains "Substantial". From the technical capacity perspective, as discussed above under the Technical design of project or program risk, the technical complexity could challenge the institutional capacity of the RD, which will be mitigated by a number of actions, as described above.

Environmental and Social. The environmental risk is assessed as high. The social risk is assessed as moderate. The combined environmental and social risk rating is high, because according to the World Bank guidelines, the higher risk rating prevails.

Environmental. This rating is assessed as High. The AF will finance construction of the Highway section of about 8 km in a new alignment. Works will be undertaken in a difficult terrain, crossing steep slopes, forests and the river. Two lanes of the carriageway will be built in a greenfield that will cause irreversible alteration of the landscape and lead to habitat fragmentation for some animal populations. De-listing of a considerable strip of forested land from the State Forest Fund and clearing of vegetation will be required to create Highway corridor in the new alignment. Furthermore, provision of the Right of Way on the left bank of Rikotula River as well as drilling of a new tube of Rikoti tunnel will generate vast amounts of excess material. Temporary and final disposal of this material will be a significant challenge. One of the options for the final disposal, suggested at present, implies depositing cut-to-spoil material in private agricultural lands, spreading topsoil over it, and returning land plots to their original use. This option will require much awareness-raising and consensus-building among local communities, and will imply compensation payments for the temporarily restricted access to private property. The final outcome of such endeavor as well as the time required to undertake it is difficult to estimate beforehand. Alternatively, material may be used for backfilling of quarries in various sections of the EWH at the expense of the increased travel distances and time. Finally, the weak national legal and institutional framework for regulating mining sector in Georgia leaves proper management of quarrying for natural construction materials up to the binding requirements of the World Bank's safeguard policies, and demands intense control and supervision by the Bank team. Because of these challenges, environmental risks of the proposed AF are considered to be high.

Social. This rating is assessed as moderate. The true nature of social impact in terms of land acquisition and resettlement is still unknown as the preparation of the detailed engineering design and development of the

Resettlement Action Plan (RAP) is currently being prepared. However, based on a deskwork and the ESIA findings, the selection of the 11 km long "blue" route alignment from Chumateleti to Khevi is expected to minimize adverse social impact and is considered to be low to moderate. There are no villages located in the immediate proximity to the existing 2-lane road section from Chumateleti to Khevi as it runs mainly through mountainous terrain and sparsely populated area. Some physical displacement could take place. The ESIA findings indicate that construction works might cause economic displacement of several roadside vendors and operating businesses (seven restaurants/cafe shops) as well.

All other risk categories are expected to keep the existing ratings.

Annex 1: Revised Results Framework and Monitoring Indicators

Project Name:	East West Highway Corridor Improvement Project Additional Financing (P160152)			Project Stage: Additional Financing	Status: DRAFT
Team Leader(s):	Mustapha Benmaamar, Nargis Ryskulova	Requesting Unit:	ECCSC	Created by:	Nargis Ryskulova on 08-Aug-2016
Product Line:	IBRD/IDA	Responsible Unit:	GTI03	Modified by:	Nargis Ryskulova on 19-Sep-2017
Country:	Georgia	Approval FY:	2018		
Region:	EUROPE AND CENTRAL ASIA	Financing Instrument:	Investment Project Financing		
Parent Project ID:	P149952	Parent Project Name:	East-West Highway Corridor Improvement (P149952)		

Project Development Objectives

Original Project Development Objective - Parent:

The proposed PDOs are to: (i) reduce road user costs along the East-West Highway Corridor section upgraded under the project; and (ii) strengthen the capacity of the Roads Department and the Ministry of Economy and Sustainable Development to respectively manage the road network and provide an enabling environment to improve logistics services.

Proposed Project Development Objective - Additional Financing (AF):

No changes

Results

Core sector indicators are considered: Yes Results reporting level: Project Level

Project Development Objective Indicators

Status	Indicator Name	Corporate	Unit of Measure	Baseline 2017	Cumulative Target Values						Frequency	Data Source/ Methodology	Responsibility for Data Collection
					YR1 (2018)	YR2 (2019)	YR3 (2020)	YR4 (2021)	YR5 (2022)	End Target YR6 (2023)			
Revised	Travel time from Zemo Osiauri to Khevi	☐	Minutes	17.7	17.7	17.7	15.8	13.2	13.2	13.2	Annually	Semi-annual progress report	RD

Revised	Vehicle Operating Costs from Zemo Osiauri to Khevi (cars)	☐	US$/km	0.310	0.310	0.310	0.297	0.280	0.280	0.280	Annually	Semi-annual progress report	RD
Revised	Vehicle Operating Costs from Zemo Osiauri to Khevi (trucks)	☐	US$/km	0.557	0.557	0.557	0.553	0.547	0.547	0.547	Annually	Semi-annual progress report	RD
Revised	Asset value of the East West Highway corridor from Tbilisi to Sarpi (GEL Million)	☐	GEL million	1,246.5	1,587	2,771	4,880	5,755	5,755	5,755	Semi-annual	Semi-annual progress report	RD
Revised	National Logistics Program adopted by MESD			No	No	Yes	Yes	Yes	Yes	Yes	Annually	Annual progress report	MESD

Intermediate Results Indicators

Status	Indicator Name	Core	Unit of Measure	Baseline 2017	Cumulative Target Values						Frequency	Data Source/ Methodology	Responsibility for Data Collection
					YR1 (2018)	YR2 (2019)	YR3 (2020)	YR4 (2021)	YR5 (2022)	End Target YR6 (2023)			
Revised	Roads constructed, non-rural from Zemo Osiauri to Khevi	☒	Km	0	0	0	8	19	19	19	Annually	Semi-annual progress report	RD
Revised	RD/ITS staff (5) staff trained in ITS services management and monitoring		Number	0	0	2	3	4	5	5	Annually	Semi-annual progress report	RD
Revised	Key ITS equipment installed on selected and prioritized East-West Highway locations		%	0	0	0	50%	75%	100%	100%	Annually	Semi-annual progress report	RD

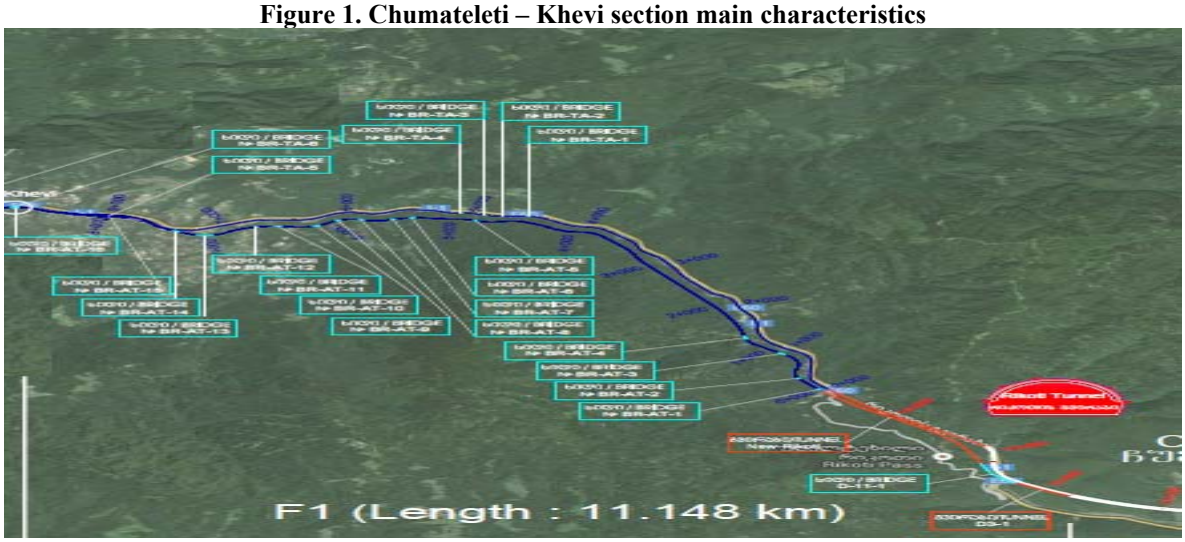
Revised	Road users satisfied with quality of road and services and the project's responsiveness to their transport needs (gender disaggregated)		%	TBD during the first year	30%	40%	50%	60%	80%	80%	Annually	Semi-annual progress report	RD
Marked for Deletion	Public/Private Steering Committee created and operational		Yes/No	No	No	No	No	Yes					
Revised	Key legislation/measures to provide an enabling environment to enhance logistics services drafted			No	No	No	No	Yes	Yes	Yes	Annually	Annual progress report	MESD
Revised	Studies to support logistics sector development completed			No	No	No	Yes	Yes	Yes	Yes	Annually	Annual progress report	MESD
Revised	MESD staff (8) trained in relevant areas, including in logistics		Number	0	0	2	3	5	8	8	Annually	Annual progress report	MESD
New	Preparation and endorsement of an Annual Road Safety Action Plan aligned with the National Road Safety Strategy			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Annually	Annual progress report	MESD
New	Percentage of project related grievances addressed by the RD		%		100%	100%	100%	100%	100%	100%	Semi-annually	Semi-annual progress report	RD

Annex 2: Project Technical Characteristics and Economic Evaluation

Section characteristics.

1. This proposed AF will support the construction of a new dual carriageway highway section of about 11 km that starts at the end of the current road section to be upgraded to dual carriageway under the original project (EWHCIP) that ends at the entrance of the Rikoti Tunnel at Chumateleti. The Chumateleti-Khevi section starts at the eastern part of the existing Rikoti tunnel and ends near the village of Khevi. The section includes 11 bridges and one new tunnel and the construction of the second tube of Rikoti Tunnel for the west to east traffic direction. This is to complement the existing tube for the east-west direction. Construction of the new tunnels and other structures in difficult topographic and geological conditions will require a thorough traffic management plan to avoid traffic interruption, as there is no alternative road in that area.

Figure 1. Chumateleti – Khevi section main characteristics



2. The Chumateleti-Khevi section is about 11 km long and its main characteristics are presented in the table below.

Characteristics			
ROAD LENGTH (4-lane)	Existing		12.100 Km
	New		11,600 Km
STRUCTURE LENGTH (4-lane)	Bridge	11 nos	975 m
	Tunnel	3 nos	2,520 m
Const. Cost in Million US$			112.8
Const. Cost in Million US$ (Including 5% Contingency)			118.4
Unit Cost in Million US$/km			10.6

Alternative alignment analysis

3. Considering the impact assessment, topographical and geological analyses between Rikoti tunnel and Argveta, four different alignments were initially considered during the feasibility study. Alternative 4 was discarded due to its negative environment and social impacts as it traverses a high value forest land and a cemetery. The first 10 km of Alternative 3 go through a high-risk landslides area and was also dropped. Further analysis was carried out to compare the remaining two alternatives (Alternative 1 and Alternative 2). Alternative 1 or Blue option which consists primarily of an improved existing alignment and Alternative 2 Yellow which consists primarily of a new alignment. The difference in the overall level of service in terms of design speed, horizontal radius, and gradient is small. The main difference between both options lies in the number and length of required structures such as tunnels and bridges. As these structures are expensive items, the cost of the two options varies significantly. The total cost of Alternative 2 is 45 percent higher than the cost of Alternative 1 and is not economically viable. Therefore, Alternative 1 which consists of optimizing the existing road is selected.

4. The economic analysis was conducted using the Highway Development and Management Tool (HDM-4), which simulates life-cycle predictions of road deterioration, road works effects and their costs and road user costs and CO_2 emission costs, and provides economic decision criteria for road construction and maintenance works. The HDM-4 analyzes projects by computing present values, at a given discount rate, of costs and benefits of different investment options in terms of savings in road maintenance costs, vehicle operating costs and travel time costs. The comparison is done between the "do something" scenario (project case) and the "do minimum" scenario (without project case) over the analysis period. The "do minimum" scenario incorporates an assessment of what would happen to the road infrastructure and road users if the project was not undertaken. The project scenario consists of the project construction works followed by proper maintenance works over the analysis period. The evaluation considered a 12 percent discount rate and a 25-year evaluation period.

5. The current road from Chumateleti to Khevi is a 12.1 km 2-lane Asphalt Concrete road with an average roughness of 3.37 IRI, m/km, road width of 7.5 m, rise and fall of 25 m/km and a horizontal curvature of 150 deg/km. The upgraded road will be a dual 2-lane carriageway with Cement Concrete pavement. The estimated financial investment cost is EUR100.0 million or US$118.4 million, including taxes and 5 percent contingencies, corresponding to EUR8.96 million or US$10.6 million per km. Economic investment costs, net of taxes and price contingencies, were estimated at 80 percent of the financial costs. The construction period is three years, and the expressway is expected to be opened to traffic at the end of 2020. The Project (of about 11 km) will bring direct benefits to road users arising from a reduction in vehicle operating costs, passenger time and CO_2 emissions costs as a consequence of shortened trip distance, improved ride quality and relief of road congestion. The Project will also have a positive impact on communities living in the vicinity of the project road through stimulation of economic activity in the region and provision of better access employment opportunities, local markets and basic social services. However, these benefits were not included in the economic analysis because they are difficult to quantify in monetary terms.

6. A comparison in journey distance between the existing road and proposed new road shows a very high distance savings of around 10 percent (1.0 kilometer). The current journey time on the existing road is around 14.5 minutes by car (average journey speed of about 50 km per hour). Whereas, on the proposed project road, an average journey speed of 80 km per hour is expected, translating into an average

journey time of about 8.4 minutes. Hence, a time saving of some 6 minutes per trip could be achieved as a result of the project.

Project Traffic

7. Most of the traffic that will use the project road will go through the Rikoti tunnel; thus, its traffic was used to estimate the expected traffic on the project road (see Table 5.2).

Table 3: Rikoti Tunnel Traffic

Year	AADT (vehicles/day)	Traffic Annual Growth	
		Period	%/year
2005	4,036	2005-2010	7%
2006	5,083	2010-2014	14%
2007	6,140	2005-2014	10%
2008	5,831		
2009	5,505		
2010	5,664		
2014	9,570		
2019*	13,314*		

* Estimated Rikoti Tunnel traffic at opening of the project road

8. The Rikoti tunnel traffic increased on average by 10 percent per year from 2005 to 2014 and is estimated to reach 13,314 vehicles per day in 2019, assuming an annual growth rate of 5.5 percent per year from 2014 to 2017 for passenger cars and 5.25 percent for other vehicles. The estimated normal traffic growth rates are presented in the table below. The World Bank estimates that Georgia's GDP per capita will grow at 3.6 percent per year from 2015 to 2018.

Table 4: Estimated Annual Traffic Growth

Period	Traffic Annual Growth (%)	Estimated GDP per Capita Annual Growth
2015-2020	5.40%	3.6% (2015-2018)
2021-2025	4.90%	
2026-2035	3.80%	
2031-2040	3.40%	

9. Based on origin destination surveys done in 2014, it is estimated that 85 percent of the Rikoti tunnel traffic will use the project road in 2020. In addition, generated traffic was assumed to reach 10.0 percent of the normal traffic five years after the new road will be opened. The table below presents the estimated traffic on the project road.[4]

[4] Normal traffic is the expected traffic on the project area with or without the project. Generated traffic is the additional traffic that will occur due to reduction in transport cost and the economic development it will produce on the project area.

Table 5: Normal and Generated Traffic

year	Normal Traffic	Generated Traffic	Total Traffic
2019	10,631	0	10,631
2025	14,247	1,425	15,672
2030	17,168	1,717	18,884
2035	20,687	2,069	22,756
2040	24,451	2,445	26,896

10. The proposed project will have positive impact on the existing road local traffic, as there would be a reduction in traffic volume on the existing road with the proposed project. However, for a conservative evaluation, the economic analysis did not consider the benefits to the remainder traffic on the existing road.

Road User Costs

11. The working time cost per bus passenger was assumed to be EUR2.5 or US$2.55 per hour, based on the 2015 average monthly income per capita of Georgia.[5] The cost of non-working time was assumed to be 30 percent of the working time cost. The cars passenger's time costs were assumed to be one and a half the bus passenger costs. Road user costs savings, however, are not to be confined to journey time alone, other distance related savings would include fuel cost and other vehicle operating costs such as vehicle wear and tear and vehicle repairs and maintenance costs. The table below presents the vehicle fleet characteristics and economic unit costs adopted on the economic analysis and the estimated traffic composition on the project road, which shows the majority of the traffic is composed of cars and vans (70 percent), while trucks account only for 18 percent of the traffic. In addition, the social cost of CO_2 emissions was included on the economic analysis, estimated at EUR25.35 or US$30 per ton of CO_2 emissions.[6]

Table 6: Vehicle Fleet Basic Characteristics and Economic Unit Costs

	Car	Vans	Minibus	Bus	2 Axles Truck	3 Axles Truck	4+ Axles Truck
Economic Unit Costs							
New Vehicle Cost (US$/vehicle)	20,454	22,727	22,727	65,909	29,545	38,636	100,000
New Tire Cost (US$/tire)	55	273	91	341	182	273	364
Fuel Cost (US$/liter)	0.75	0.75	0.75	0.75	0.75	0.75	0.75
Lubricant Cost (US$/liter)	6.18	6.18	6.18	6.18	6.18	6.18	6.18
Maintenance Labor Cost (US$/hour)	0.72	1.64	1.64	1.64	2.10	2.10	3.00
Crew Cost (US$/hour)	0.00	2.55	2.55	2.55	2.55	2.55	2.55
Overhead (US$/year)	640	720	640	1280	860	1060	1280
Interest Rate (%)	12	12	12	12	12	12	12
Passenger Working Time (US$/hour)	3.83	3.83	2.55	2.55	0.00	0.00	0.00
Passenger Non-Working Time (US$/hour)	1.13	1.13	0.75	0.75	0.00	0.00	0.00
Cargo Time (US$/hour)	0.00	0.00	0.00	0.00	1.79	2.68	4.02

[5] The average monthly income per capita in Georgia increased from GEL92.3 per month in 2005 to GEL246.6 in 2013 as reported by the National Statistics Office of Georgia.
[6] Guidance of the SDNCE/CCGCE Guidance note on social value of carbon in project appraisal, July 14, 2014.

Basic Characteristics							
Kilometers Driven per Year (km)	23000	30000	40000	80000	60000	80000	120000
Hours Driven per Year (hr)	550	1300	750	1750	1300	1200	2050
Service Life (years)	10	8	8	12	8	12	14
Percent Private Use (%)	100	0	0	0	0	0	0
Number of Passengers (#)	2.35	0.00	15.00	40.00	0.00	0.00	0.00
Work Related Passenger-Trips (%)	75	100	75	75	100	100	100
Gross Vehicle Weight (tons)	1.20	1.50	2.20	10.00	2.00	7.50	28.00
Equivalent Standard Axels (ESA)	0.02	0.14	0.02	1.51	0.84	2.50	3.50
Traffic Composition (%)	59%	11%	11%	1%	2%	2%	14%

12. The unit road user costs of a car and 3 axles truck with the project, in US$ per vehicle-km, will be 26 and 25 percent respectively less than without the project due to the improved ride quality, distance savings and reduced travel time (see table below). The unit vehicle operating costs of a car will reduce from US$0.24 per vehicle-km without the project to US$0.21 per vehicle-km with the project. The unit vehicle operating costs of a 3-axle truck will reduce from US$0.63 per vehicle-km without the project to US$0.50 per vehicle-km with the project. At the year of the opening of the project road, it is estimated that the project traffic will emit 19,393 tons of CO_2, which represents a 23 percent reduction of CO_2 emissions compared with the case of the same traffic using the existing road (25,239 tons). Over the entire 25-year evaluation period, the total CO_2 emissions are expected to decrease by 21 percent due to the shortened travel distance and reduced congestion brought about by the project, decreasing from 964,525 tons to 757,748 tons representing a net reduction of 206,777 tons.

Table 7: Unit Road User Costs (US$ per vehicle-km)

		Car	Van	Minibus	Bus	2 Axles Truck	3 Axles Truck	4+ Axles Truck
Without Project	Vehicle Operating Costs	0.24	0.37	0.34	0.47	0.41	0.63	1.11
	Travel Time Costs	0.17	0.00	0.75	1.83	0.05	0.09	0.11
	Road User Costs	0.42	0.37	1.09	2.29	0.46	0.72	1.22
With Project	Vehicle Operating Costs	0.21	0.30	0.29	0.41	0.34	0.50	0.94
	Travel Time Costs	0.10	0.00	0.42	1.19	0.02	0.03	0.05
	Road User Costs	0.31	0.30	0.71	1.59	0.36	0.54	0.99

13. The project can potentially contribute towards the achievement of Georgia's Nationally Determined Contributions (NDC) by 2030. The project has potential mitigation and adaptation co-benefits. Overall the construction of the highway section will reduce vehicle operating cost by 10% and fuel consumption and lead to increased energy savings for road users, thus reducing the overall country carbon footprint. The installation of the Intelligent Transport System (ITS) priority equipment along the priority sections of the East West Highway Corridor will provide traffic information and will reduce traffic congestion, hence fuel consumption and GHG emissions. The project detailed engineering design, includes a slight road realignment to minimize the use of landslide prone areas, and mitigation measures such as slop stabilization, debris prevention, retaining walls, bridges and culverts to increase the project resilience to climate change. The cost estimate of the resilience measures of the Zemo-Osiuari-Chumateleti section is estimated at USD 10.7 million or around 5 percent of the total construction cost.

Economic Analysis Results

14. Using the project cost estimated at the feasibility study stage, the return on the investments of the overall project is satisfactory with an EIRR of 14.7 percent, Net Present Value (NPV) of GEL53.2 million, at a discount rate of 12 percent. The EIRR for the sections (F0, F1, F2, F3 and F4) between Rikoti Tunnel and Argveta is 13.5 percent. The results of the economic analysis are presented in the table below.

	Chumateleti-Khevi (F1)	Rikoti-Argveta F0+F1+F2+F3+F4)
Economic Internal Rate of Return, EIRR (%)	14.7%	13.5%
Net Present Value, NPV (GEL million)	53.2	222.6

15. The results of the economic analysis will be revised based on the final cost of the civil works that will be derived from the detailed engineering design.

16. A sensitivity analysis was carried out to assess the robustness of the results to possible variations in key project parameters, which in this case were identified as construction costs and the forecasted traffic at opening of the project road. A severe worst case scenario with construction costs increased by 10 percent and traffic at the opening of the project road decreased by 10 percent shows a marginal return for the project with an EIRR of 10.9 percent.

Base Case	14.7%
Construction Costs + 20%	13.0%
Traffic at Opening - 20%	11.7%
Construction Costs + 10% and Traffic at Opening -10%	10.9%

Annex 3: Measuring the Impact of Highway Investments on Georgia's economy and regional trade

1. Georgia is upgrading its principal highway, running for more than 350 kilometers between the Black Sea on its western border and Azerbaijan in the east, at a cost of about US$2.3 billion, or nearly 14 percent of its 2014 GDP—a transformational investment program in the East-West Highway or so called Middle Corridor. Apart from the immediate effects of the construction (financed largely by international institutions), how much will this relatively large investment improve Georgia's economy, access to international markets and boost exports?

4.2 percent gain in GDP

The estimated long-term GDP gain arising from reduced travel costs expected from upgrading the transnational highway according to general equilibrium simulation.

US$ 776-1,466 million

Estimated additional export revenues from upgrading the entire East West Highway according to calculations based on gravity model results.

Background

2. The government of Georgia is bringing its transnational EWH—the so called Middle Corridor—up to international standards to strengthen the country's position as a transport and logistics hub on the E60 international highway corridor, which runs between China and France. The upgrade will position Georgia as a key transport transit country in the region.

3. International financial institutions are expected to finance the bulk of the estimated US$2.3 billion project, toward which the World Bank has committed about US$500 million.

4. The road carries almost one-fourth of all vehicle traffic in Georgia and almost one-half of its international traffic. At current traffic volumes, upgrading it to the international four-lane motorway standard will reduce travel times by raising the allowable travel speed and, by realigning some sections, reducing the overall length of the highway. The investments will improve connectivity between the Black Sea and Azerbaijan, which borders the Caspian Sea; lower the cost of transport and logistics; and thus, improve Georgia's connection to global markets. Upgrading is finished on about one-third of the road length, and the government is targeting full completion by 2020.

Phase 1 General Equilibrium Modeling

5. In 2015 the World Bank completed a study aimed at quantifying economy wide benefits of investment in the EWH, through the assessment of indirect impacts of cumulative investments (World Bank 2015). In order to assess the medium and long-term economy-wide benefits of the EWH this study used a computable general equilibrium (CGE) model, which simulates indirect benefits associated with the completion of the upgraded road corridor.

6. The results showed that the reduction in travel costs had a positive effect on growth and welfare. Compared with outcomes in the absence of an upgrade, Georgia's real GDP would be 4.2 percent higher

in the long term. This figure would be somewhat lower if externalities such as global and local pollutants from generated traffic had been added to the analysis. On the other hand, the overall impact on GDP of the EWH would be larger than 4.2 percent, once the impacts of construction itself have been included.

7. Other long-run gains exceeding 4 percent in real terms were in exports, household consumption, and household income, with rural income gaining slightly more than urban. All quintiles of household income made long-term welfare gains.

Phase 2 Gravity Modeling

8. As a follow-up to the 2015 study, in 2016 the World Bank conducted a study to quantify the East-West Highway improvement program on Georgia's ability to access international markets. As highlighted extensively in the literature, improving transport infrastructure and the efficiency of the logistics sector can help countries gain competitiveness in international export markets, which can translate into faster economic growth and higher income. This study hypothesizes that investments in the EWH have reduced the cost of shipping Georgian goods to the rest of the world, and such reductions should be more significant for goods transported by road. To estimate the effect of cost reductions generated by improvements in the EWH, a gravity-type model in first-differences has been estimated.

9. In the simplest gravity model of trade, the volume of bilateral trade depends positively on the sizes of trade partners and negatively on the distance between them (proxy for trade costs). Using data for the 2005-2015 period, we regress the annual growth rate of exports, disaggregated by products, customs offices clearing them and modes of transport, on annual improvements in the EWH and its interaction with a binary variable indicating road transport.

Gravity Model Results

10. The results show that (i) a 10 percent increase in the length of upgraded road network predicts a 1.1 percent increase in exports transported by road while no significant effect is estimated for exports on other transport modes (rail, sea, and air); (ii) the resulting increase in exports by road was reflected by a decrease in exports transported by sea; (iii) the effect is statistically and economically significant only for customs offices located along the EWH; (iv) only exports of time-sensitive products responded positively and significantly to improvements in the EWH during the 2006-2015 period; and (v) upgrading the entire EWH is estimated to generate additional export revenues between US$776 million and US$1,466 million.

11. It is important to note that the overall trade generating effect of the investment is expected to be somewhat lower as the results suggest some substitution between road and sea transport, but the overall impact is a significant boost to exports.

For further information on this topic:
World Bank, 2016, *Georgia: Economic Impact of EW Highway Phase 2, Assessing the Impact of the East-West Highway Investments on Exports through Gravity Modeling. Report AUS17153.*
http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/ECA/2016/06/27/090224b08440a825/1_0/Rendered/PDF/Final0Report.pdf

World Bank, 2015, *Georgia: Assessing Economy Wide Indirect Impacts of East-West Highway Investments through CGE Modeling*, Report ACS15092.
http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2015/09/28/090224b083108055/1_0/Rendered/PDF/Georgia000Asse0through0CGE0modeling.pdf

Annex 4: Alignment between Zemo Osiauri and Argveta