

Environmental Monitoring Report

#1 Semestral Report
June 2013

GEO: Sustainable Urban Transport Investment Program – Tranche 2

Prepared by the Municipal Development Fund of Georgia for the Government of Georgia and
the Asian Development Bank.

Biannual Environmental Monitoring Report

Project Number: 2879-GEO
2880-GEO (SF)
Reporting period: January – June, 2013

GEORGIA: GEORGIAN SUSTAINABLE URBAN TRANSPORT INVESTMENT PROGRAM , Tranche 2

(Financed by the Asian Development Bank)

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5 August, 2013

ABBREVIATIONS

ADB	Asian Development Bank
EA	Executing Agency
EARF	Environmental Assessment and Review Framework
EIA	Environmental Impact Assessment
EIP	Environmental Impact Permit
EMP	Environmental Management Plan
GoG	Government of Georgia
SUTIP	Georgian Sustainable Urban Transport Investment Program
IA	Implementing Agency
IEE	Initial Environmental Examination
MDF	Municipal Development Fund
MFF	Multitranches Financing Facility
MoEPNR	Ministry of Environmental Protection and Natural Resources
MoRDI	Ministry of Regional Development & Infrastructure

Table of Contents

- ABBREVIATIONS..... 3**
- I. INTRODUCTION..... 5**
 - A. Construction activities during project implementation 6**
 - B. Environmental Management Team..... 6**
 - C. Project Organization 7**
- II. ENVIRONMENTAL MONITORING 7**
- III. ENVIRONMENTAL MANAGEMENT 7**
 - A. Site Inspections..... 7**
 - B. Reporting 7**
 - C. Corrective Action Plans 8**
 - D. Consultation and Complaints..... 8**
- ANNEX..... 9**

I. INTRODUCTION

Upgrading and improvement of local transport and transport-related infrastructure plays a significant role in the development of Georgia infrastructure. To this effect a number of important activities have been implemented and financed from the budget of Georgia and from other sources. Development of transport and related infrastructure plays an important role in improvement of Georgia's urban infrastructure. Recently several significant programs, financed through state budget, loans and grants, have been implemented with this regard. Notwithstanding the efforts undertaken so far several problems need to be solved regarding development of transport infrastructure.

Sustainable Urban Transport Investment program (SUTIP) tranche 2 includes construction services for modernization of Tbilisi-Rustavi section of Tbilisi-Red Bridge road (Azerbaijan border) section I and III. Program aims efficient, reliable and affordable urban infrastructure development and service improvement. In effect, urban transport service will be improved, and the level of different types of public and social services will be increased.

The environment classification for tranche is Environmental Category B, as the subprojects under SUTIP 2 were classified as category B which will not have significant irreversible or permanent negative environmental impacts during or after construction and requires preparation of Initial Environmental Examination (IEE).

The environmental categorization of subprojects were conducted using ADB's Safeguard Policy Statement (2009), the required environmental assessment was conducted and the IEEs including environmental management plans (EMP) which are the integrated part of IEEs have been prepared accordance with environmental assessment and review framework (16.04.2010) approved for SUTIP 1.

According to the Law of Georgia on Environmental Impact Permit activities related to the construction or reconstruction of the International and National motor roads and highways are subject to the ecological examination and needs an Environmental Impact Permit to be issued and an Environmental Impact Assessment report to be prepared. Conformably, The EIA reports for section 1 and section 3 of Tbilisi-Rustavi section have been prepared, submitted to MoEPNR and positive conclusion of ecological examination was issued, which is the ground for construction permit.

Modernization of Tbilisi-Rustavi section of Tbilisi-Red Bridge road (Azerbaijan border)

The Project is funded by the Government of Georgia (GoG) and the Asian Development Bank (ADB). The Municipal Development Fund of Georgia (MDF) is the project executing agency. The Project envisages Modernization of Tbilisi-Rustavi Section of the Tbilisi-Red Bridge (Azerbaijani Border) Road.

Technical parameters of existing road do not meet safety requirements and do not ensure undisturbed traffic. Frequent accidents are leading to injuries and human toll as well as causing economic loss. The road improvement aims to decrease traffic nuisance, air pollution, traffic congestions as well as number of road accidents. Implementation of the project will improve accessibility, connectivity and trade in South Caucasus and Georgia.

Government of Georgia declared modernization of the Tbilisi-Rustavi road section as the priority project. The project envisages turning the existing 17.1 km 2-lane road into an international standard Category - I road with 4 to 6 lanes and 100-120km/hr of design speed.

According to Detailed design for the modernization of Tbilisi-Rustavi section of Tbilisi-Red Bridge road (Azerbaijan border) prepared by Design Consultant Project is divided into three sections:

- First section Tbilisi-Ponichala, length 4.0 km;
- Second section Ponichala, length 6.8 km;
- Third section Ponichala-Rustavi, length 6.6 km.

Under Tbilisi-Rustavi section of Tbilisi-Red Bridge road (Azerbaijan border) modernization project (SUTIP tranche 2) includes construction services for section I and III.

Section 1: Tbilisi – Phonichala has 4.0km long length of road alignment on the Project. Tbilisi-Ponichala section of the project alignment is entirely located in Tbilisi, passing through narrow paths between Shavnabada and the river Mtkvari. It will be considered upgrading the existing section of the road between Tbilisi (Gulia street square) and Phonichala Settlement (Kvemo Phonichala). The existing 2 lanes road will be upgraded to 6 lanes of which the width of each lane has 3.50m. The central barrier is of 6m width. Side walk for pedestrian will be installed on both sides – of 2.5~3.0m width. Pavement is of asphalt concrete. The new road infrastructure includes one bridge at interchange and the other two bridges over the dry gorges descending from adjacent slopes to the existing road, and one interchange.

Section 3: Phonichala – Rustavi has 6.7km long length of road alignment on the Project. Tbilisi-Ponichala section of the project alignment is entirely located in Gardabani district, Alignment of project road mainly coincides with the alignment of the existing road Tbilisi-Red Bridge. Radii of horizontal and vertical curves, longitudinal and transverse slopes, superelevations correspond to highway parameters according to the Terms of Reference. Design road axis passes on the right shoulder of the existing road. It will be considered upgrading the existing section of the road between the settlement of Phonichala and Rustavi. The existing 2 lanes road will be upgraded to 4 lanes. The width of each lane is 3.75m. The central barrier has 6m width and no sidewalk on this section. Pavement is of concrete. The project will require filling of the existing channel passing in parallel with the road and construction of a new channel nearby. The new road infrastructure includes one bridge over the new design channel and 2 bridges at interchange and 3 interchanges.

A. Construction activities during project implementation

The project was tendered and is the construction contractor is not selected yet.

B. Environmental Management Team

An environmental protection analysis and resettlement division existing under MDF consists of Mr. Alexandre Dumbadze, Head of the division as Manager and Ms. Nino Patarashvili, Mr. David Baidurashvili, Mr. Nikoloz Soselia and Ms. Ekaterine Mumladze as Environment and Resettlement Specialists of division. The responsible person on supervision of EMPs implementation from MDF under reconstruction/rehabilitation project of Zugdidi-Jvari-Mestia-Lasdili motorway SUTIP tranche 1 was Mr. Nikoloz Soselia - specialist of environmental protection analysis and resettlement division.

During project implementation MDF environmental specialist should be involved in the monitoring of implementation of the environmental mitigation measures specified in the EMP of

the current project. The environmental monitoring should be carried out in accordance with the plans and schedules outlined in the EMP and the schedule for conducting of monitoring approved by MDF management.

The supervisory company - Joint Venture of Dohwa Engineering Co., Ltd (Korea), Leading Partner, Transproject Ltd (Georgia), Partner and Roads Rehabilitation and Modernization Supervision Direction Ltd. (Georgia), Partner was hired by MDF (contract # SUTIP/C/QCBS-3 20.01.2012) In accordance with the contract, the company was also responsible on consultants' services of engineering, procurement, construction management and supervision of the Modernization of Tbilisi-RusTavi Section of the Tbilisi-Red bridge (Azerbaijani Border) road. Construction management and supervision of the project also includes environmental supervision. The supervisory company should be responsible for supervision of environmental compliances during project implementation.

C. Project Organization

The project was tendered and is on the stage of construction contractor selection.

II. ENVIRONMENTAL MONITORING

During project implementation environmental monitoring should be conducted by MDF environmental staff. The monitoring include periodic unannounced visits to the project site in order to check the current situation on-site, how does construction contractor implement site specific EMPs and how do construction contractor and consultant supervisory company work with each other to avoid serious environmental and social impacts through proper implementation of mitigation measures specified in EMPs.

The supervisory company should be responsible for daily monitoring of civil works and reporting MDF during project implementation period. The supervision includes environmental monitoring of construction activities.

III. ENVIRONMENTAL MANAGEMENT

A. Site Inspections

The site visits should take place periodically during the construction works, after construction contractor selection and mobilization on the site.

B. Reporting

Before starting of construction activities the construction contractor is responsible for preparing of site specific EMPs in accordance with EMP which is part of IEE prepared for the current project. The contractor should submit weekly/monthly reports about implementation of EMPs during project implementation.

During construction supervision the Consultant contractor shall, within two months of Commencement of Services, submit an Inception Report setting out the parameters of the consulting services including the main civil works contract, the program of works, the Consultant's site organization chart, the manning schedule, and an updated methodology for the

services including the education programs and the environmental and social monitoring plan. This Report will outline how the Consultant intends to implement the project. The Report shall also give the status at the start of the services of those items of the ToR which were already in progress (resettlement, environmental benchmarks etc.) together with the progress of the work to-date and a schedule of certified payments, if any.

The Consultant shall, subsequent to the Inception Report, submit monthly progress reports by the 15th of the month following the reporting month, reflecting the progress of the work during the reporting month - the Executive Summary of these reports consisting of (i) one or two pages outlining the position for the complete Project together with (ii) the single page contract status report for the ADB-funded sections of road. These reports should include environmental Monitoring reports to monitor the progress of the environmental management plan-bi-annually, along with various information requested by the contract.

MDF prepares and submits bi-annual environmental monitoring reports to ADB.

C. Corrective Action Plans

The project was tendered and is on the stage of construction contractor selection. As the construction activities haven't carried out yet, no developing of any type of corrective action plans was needed.

D. Consultation and Complaints

The public consultation meeting with local communities was held to discuss IEEs/EIA reports prepared for the section 1 and section 3 of "Modernization of Tbilisi-Rustavi Section of the Tbilisi-Red Bridge (Azerbaijani Boarder) road".

No complaints were received during reporting period.

ANNEX

**Environmental Management Plan
Construction Phase**

Issue	Sites	Recommended Measures	Timeframe	Implementation/ Compliances	Comments
<p>Destruction of natural landscape (relief, soil cover, vegetation, eco-systems, habitats and wildlife) in the Right-of-Way occupied by the highway.</p> <p>Activities: land clearance, topsoil stripping and excavations</p>	<p>Whole alignment of road to be widened</p>	<p>Pre-entry survey for preventing damage to fauna will be conducted prior to startup of land clearance (inspection of bat living sites; inspection of nests in RoW)</p> <p>Sticks will be installed in pits and trenches for escaping small mammals.</p> <p>Proper top-soil storage practice, as described below, will be applied and stored topsoil will be used for reinstatement and landscaping;</p> <p>Compensatory planting of the red data tree species should be facilitated with the proportion of 1:10; Replanting of other trees as minimum with ratio 1:1</p>	<p>prior to startup of land clearance</p> <p>Excavation period</p> <p>From land clearance – till reinstatement</p> <p>Develop planting plan before construction start up.</p> <p>Implement before completion</p>	<p>N/E</p>	<p>Satisfactory</p>

<p>Destruction of natural landscape (relief, soil cover, vegetation, eco-systems, habitats and wildlife) on the access roads, in the borrow pit sites, waste dumps, construction camps and equipment yards.</p>	<p>Camp site; Quarry sites; (e.g. mtkvari floodplain). Waste dumps, construction camps and equipment yards.</p>	<p>Pre-entry survey will be conducted for preventing damage to flora and fauna;</p> <p>In case of unavoidable impact on rare or protected species of flora, replanting program will be planned and executed;</p> <p>Sticks will be installed in pits and trenches for escaping small mammals</p> <p>Proper top-soil storage practice, as described below, will be applied and stored topsoil will be used for reinstatement and landscaping;</p> <p>Landscaping plan will be developed and implemented;</p>	<p>prior to startup of land clearance</p> <p>Excavation period</p> <p>From land clearance – till reinstatement</p> <p>After completion of civil works</p>	<p>N/E</p>	<p>Satisfactory</p>
<p>Erosion stimulated from fresh road cuts and fills and temporary sedimentation of natural drainage ways.</p> <p>Erosion of lands below the road bed receiving concentrated outflow from covered or open drains.</p>	<p>Along the whole section of the road</p>	<p>Permanent and temporary anti-erosion measures will be implemented according to the Detailed Design (temporary drainage, biomatting or geo - textile cover, berms etc.)</p> <p>For mitigation of sedimentation impact following measures will be implemented:</p> <ul style="list-style-type: none"> - Limitation of earth moving to dry periods. - Protection of most susceptible soil surfaces with mulch. - Protection of drainage channels with berms, straw or fabric barriers. - Installation of sedimentation basins <p>For mitigation of induced erosion following measures will be implemented:</p> <ul style="list-style-type: none"> - Appropriate sized rain-storm-water channels will be constructed. - Drain outlets designed so as to avoid cascade effect. 	<p>Construction period</p>	<p>N/E</p>	<p>Satisfactory</p>

		<ul style="list-style-type: none"> - Provision for cross drainage structures will be made. <p>Water receiving surfaces to be lined with stones, concrete</p>			
Increased suspended sediment in streams affected by erosion at construction sites and fresh road cuts, fills and waste dumps. Declined water quality and increased sedimentation	Subsections close to the r. Mtkvari	<p>Mitigation strategy: prevention through implementing temporary anti-erosion measures – temporary drainage, temporary sediment catchments etc.</p> <ul style="list-style-type: none"> - Protect susceptible surfaces with r fabric, - Establishment of retention ponds to reduce sediment loads before water enters streams 	Construction period	N/E	Satisfactory
Topsoil losses due to improper storage and handling Earthworks will impact the fertile top soils that are enriched with nutrients required for plant growth or agricultural development	Whole alignment: the sections of road;	<p>The Contractor shall</p> <ul style="list-style-type: none"> - Strip the top soil to a depth of 15 cm and store in stock piles of height not exceeding 2m and with a slope of 1:2 - Spread the topsoil to maintain the physico-chemical and biological activity of the soil. The stored top soil will be utilized for covering all disturbed area and along the proposed plantation sites - Topsoil stockpiles will be monitored and should any adverse conditions be identified corrective actions will include: <ul style="list-style-type: none"> • Anaerobic conditions - turning the stockpile or creating ventilation holes through the stockpile; • Erosion - temporary protective silt fencing will be erected; 	Construction period: starting from topsoil stripping and ending with reinstatement;	N/E	Satisfactory
Soil and surface water contamination by oil, lubricants, fuel and paint in the RoW, bridge sites and equipment yards	Soil - the whole alignment;	<p>The Contractor shall</p> <ul style="list-style-type: none"> - Prepare spill control procedures and submit the plan for RD approval. - Train the relevant construction personnel in 	Construction period	N/E	Satisfactory

		<p>Provide for disposal facilities agreed with local municipalities;</p> <p>Allow local communities to utilize any excess rock, which may be left following reuse.</p> <p>Transport any further material to the nearest spoil disposal sites agreed with the municipal services. The main purpose is not to damage valuable landscapes or soil deposits and other ecological sensitivities.</p> <p>Demolished metal constructions should be disposed as a scrap.</p> <p>The personnel involved in the handling of hazardous and non-hazardous waste will undergo specific training in:</p> <ul style="list-style-type: none"> - Waste handling - Waste treatment; and - Waste storage. <p>Burning of waste on any construction site is forbidden with the exception of stub and small branches from felled trees and bushes, which is better to be burned in order to avoid pest dissemination.</p>	<p>Construction period</p> <p>Mobilization phase and Construction period</p>		
Emission from Construction Vehicles & Equipment causing air pollution	the whole alignment	<ul style="list-style-type: none"> - Emission levels of all construction vehicles & equipment will conform to Georgian emission standards. - Any crushing & concrete plants will be away from populated areas. - Adherence to engine maintenance schedules and standards & repair - All vehicles and plants shall be maintained so that their emissions do not cause nuisance to workers or local people. - Regular maintenance of diesel engines will be 	Construction period	N/E	Satisfactory

		<p>undertaken to ensure that emissions are minimized, for example by cleaning fuel injectors. Routine maintenance will be to a high standard to ensure that vehicles are safe and that emissions are minimized.</p> <ul style="list-style-type: none"> - Vehicle refueling will be undertaken so as to avoid fugitive emissions of volatile organic compounds through the use of fuel nozzles and pumps and enclosed tanks (no open containers will be used to stored fuel) 			
<p>Dust generation from construction sites, material stockpiles and access roads.</p> <p>Dust is a nuisance in the environment causing health impacts for workers and local population;</p>	The whole alignment	<ul style="list-style-type: none"> - All precautions to be taken to reduce dust level emissions from batching plants & portable crushers with spraying of water and containment measures. - During dry conditions material delivery vehicles and haul vehicles carrying sand and fill material will be covered with tarpaulin. The construction site and any local roads will be watered as appropriate. - Protective equipment to be provided to workers as necessary e.g. at quarries, stone crushers. - Use of defined haul routes and reductions in vehicle speed where required with appropriate traffic management planning - Sheeting of construction materials and storage piles; 	Construction period	N/E	Satisfactory
<p>Noise pollution from vehicle operation during construction in populated areas traversed by the highway, notably metropolitan areas or densely settled rural areas. Local noise.</p>	The whole alignment	<p>Install and maintain mufflers on equipment.</p> <p>Routine maintenance will be to a high standard to ensure that vehicles are safe and that emissions and noise are minimized. All plant used on site will be regularly maintained so as to be in good working order at all times to minimize noise.</p> <p>Prohibit night works near the settlements</p>	Construction period	N/E	Satisfactory

<p>Infrastructure. The main infrastructure element that could be affected are:</p> <ol style="list-style-type: none"> 1. power lines 2. Gas mainline and local supply pipelines 3. Optical fiber cable 		<p>Protection of infrastructure</p> <p>Implement the individual relocation/reconstruction plan and design as agreed with the owners of infrastructure within the frames of Detailed Design.</p> <p>Replace the affected infrastructure elements</p> <ul style="list-style-type: none"> • Relocation of overhead power lines within the right of way of the construction site: • Relocation of gas pipeline <p>Permanent monitoring during construction. Full reinstatement in case of damage.</p>	<p>Preparatory works before the construction start up</p>	<p>N/E</p>	<p>Satisfactory</p>
<p>Creation of temporary breeding habitats for mosquito vectors of disease e.g. sunny, stagnant pools of water. Creation of stagnant water bodies in borrow pits, quarries, etc. suited to mosquito breeding and other disease vectors.</p>	<p>whole alignment</p>	<p>Remove all created pools till spring-time. Reinstatement relief and landscape.</p>	<p>Construction period</p>	<p>N/E</p>	<p>Satisfactory</p>
<p>Health hazards by noise, air emissions and dust raised and blown by vehicles during construction activities.</p>	<p>near settlements</p>	<p>Dust control by application of watering. Use as minimum as 2 browsers;</p> <p>Noise control, installation of mufflers on equipment, daytime works;</p> <p>See points 11 - 13</p>	<p>Construction period</p>	<p>N/E</p>	<p>Satisfactory</p>
<p>Impacts on archaeological sites and remnants</p>	<p>Whole alignment</p>	<p>Permanent monitoring during land clearance and excavation activities.</p> <p>Stoppage and suspension of construction activities in case of archaeological findings. Completion of required archaeological works before restarting construction activities.</p>	<p>Before startup of construction;</p> <p>Construction period</p>	<p>N/E</p>	<p>Satisfactory</p>

		Conservation of remnants.			
Biological recontamination during earthworks near pest-holes of soil infections (e.g. anthrax);	Whole alignment	Permanent monitoring during land clearance and excavation activities. Stoppage and suspension of construction activities in case of burial site findings. Notification to the local division of Veterinary Department. Veterinary clearance before start up.	Construction period	N/E	Satisfactory
Hazardous driving conditions where construction interferes with pre- existing roads.	Whole alignment	Provide in design for proper markers and safety signs on roads, including lights. Instruct the drivers	Construction period	N/E	Satisfactory
Final Reinstatement and Long-term Anti-erosion Measures	Whole alignment	All the work sites (except permanently occupied by the road and supporting facilities) should be reinstated to its initial conditions (relief, topsoil, vegetation cover). So far as very limited bush clearance is required for the highway upgrading, preservation of top-soil is sufficient for reinstating the natural grass vegetation cover as well		N/E	Satisfactory
Tree cutting and Offset tree planting program.	Sensitive zones	Offset tree planting program should be agreed with the MoE and Rustavi Municipality. Special agreement is required with the Georgian Orthodox Church in relation with trees to be cut at the border of the Krtsanisi Park. Offset mitigation program will include measures on replanting of trees in the park zone and further improvement of the park ecology. We propose to apply tree planting ratio 1:10 for felled red data tree species and ratio 1:2 for other (non-red data) tree species. Apply procedures for extracting Red List Species From Natural Environment and procedures for exclusion of the land plots from the Forestry	Develop before construction start up. Implement before completion	N/E	Satisfactory

		Fund, where appropriate			
<p>Accident risks associated with vehicular traffic and transport, that may result in spills of toxic materials, detonation of explosive load, injuries or loss of life(see WB Environmental Sourcebook: 'Hazardous Materials Management' section), injuries or loss of life (see 'Public Health and Safety section)</p> <p>Accidents due to construction related vehicles and heavy machinery or traffic interference with construction activities.</p>	The whole alignment	<ul style="list-style-type: none"> - Provide in design for proper markers and safety signs on roads, including lights. Instruct the drivers - Design and implement safety measures and an emergency plan to contain damages from accidental spills. - Designate special routes for hazardous materials transport. - Regulation of construction transport in terms of traffic interference. - Prohibition of toxic waste transport through ecologically sensitive areas and densely populated areas. 		N/E	Satisfactory
<p>Quarrying Sites</p> <p>Taking of Borrow and Quarry Materials for construction of embankments for road, bridge approaches with potential for loss and degradation of land;</p> <p>Potential impact of the increased quarrying activities on ichthyofauna, groundwater and landscape</p>	presumably, r.Mtkvari floodplain	<p>IEE proposes to use licensed quarries located in the vicinity to the project road (see chapter 2)</p> <p>In more general terms:</p> <p>Quarry and borrow pit materials will be obtained from existing operating sites with proper licenses & environmental clearances. Control of validity of licenses. (The license is given with description of exploration limits and reinstatement commitments).</p> <p>In case of need for opening new borrow areas, all required licenses will be obtained from the Ministry of Energy and Natural Resources;</p> <p>Measures will be taken to conserve top soil. At close of use the area to be reclaimed according</p>	Construction period	N/E	Satisfactory

		<p>to licensing conditions.</p> <p>Control of vehicle operations at quarry sites. Avoid traverse of watercourse. Exclude leakage of oil or fuel. Check the condition of vehicles.</p>			
Concrete plants.	Plant site	<p>Contract only licensed supplier having all required environmental permits.</p> <p>In case if the Constructing Contractor takes decision to install and operate its own plant, specific EIA should be prepared and Environmental Impact Permit obtained</p>	Construction period	N/E	Satisfactory
<p>Construction Camp, equipment yard and Vehicle Fleet Site</p> <p>The potential impacts related to the construction and operation of the camp could be summarized as follows:</p> <ul style="list-style-type: none"> - Clearance of vegetation cover during camp construction - Potential damage of topsoil - Contamination related to fuel storage and fuelling operations - Sewerage related contamination - Waste related contamination 	camp site	<ul style="list-style-type: none"> - Proper waste management (see appendix XX Waste Management Procedures for Camps) - Apply regulations relevant to the camp sites and referred in p. 8.1.1.13 - Arrange accommodation of personnel in villages. In case if large camp will be constructed for the workers accommodation, organize sewerage according standards. - Pollution prevention measures: proper organization of fueling, waste management; - Proper storage of topsoil - Reinstatement of topsoil and vegetation cover; 	Construction period	N/E	Satisfactory