



Metro Modernization Project
Supply of the New Rolling Stock for Tbilisi Metro
Environmental and Social Management Plan

Tbilisi
August 2024

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Abbreviations

AIIB – Asian Infrastructure Investment Bank

ADB – Asian Development Bank

AS – Associated Facilities

EBRD – European Bank for Reconstruction and Development

EHS – Environment, Health and Safety

EPRP – Emergency Preparedness and Response Plan

ES – Environmental and Social

ESAP – Environmental and Social Action Plan

ESHS – Environmental, Social, Health and Safety

ESMP – Environmental and Social Management Plan

ESF – Environmental and Social Framework

ESP – Environmental and Social Policy

ESS – Environmental and Social Standards

ESMS – Environmental and Social Management System

EU – European Union

GHG – Greenhouse Gases

GRM – Grievance Redress Mechanism

H&S – Health and Safety

IFC – International Finance Corporation

ISO – International Organization for Standardization

OHS – Occupational Health and Safety

PIU – Project Implementation Unit

SEP – Stakeholders Engagement Plan

SC – Supervision Consultant

TTC – Tbilisi Transport Company

WB – World Bank

Executive Summary

Project Background

Tbilisi Transport Company (TTC) with assistance from the Asian Infrastructure Investment Bank (AIIB) is planning to implement the Tbilisi Metro Modernization Project (the proposed project) which will enhance the efficiency, reliability, safety and sustainability of the Tbilisi metro system through the procurement of new rolling stock under the AIIB Green Infrastructure and Technology-enabled Infrastructure financing initiatives. The proposed project considers procurement of 97 electric metro cars (comprising 13 units of 4-car and 9 units of 5-car metro trains). This initiative aims to replace the existing metro cars scheduled for decommissioning between 2025 and 2030 due to safety reasons and operational life span limitations.

Given the potential environmental and social impacts associated with the Project, the Project is classified as Category B according to AIIB Environmental and Social Framework. Tbilisi Transport Company (TTC), Government of Georgia has prepared this Environmental and Social Management Plan (ESMP) to address the potentially adverse environmental and social impacts that may be caused by the proposed project. During the preparation of this ESMP, relevant laws and regulations of Georgia, and AIIB's environmental and social policy and standards and other international best practices were reviewed and considered.

Environmental and Social Impacts

The Project will not involve any civil works, and environmental and social impacts are only related to mobilization, operation, maintenance and decommissioning of the metro rolling stock. The environmental and social impacts associated with the manufacturing and transportation phase of the project are (i) production of new rolling stock involves substantial industrial activities, including the fabrication of metal components, assembly of electrical systems, and painting. These processes emit significant amounts of greenhouse gases (GHGs) like CO₂, as well as other pollutants, contributing to climate change and local air quality issues. (ii) significant amounts of raw materials, including steel, aluminum, plastics, and rubber. The extraction, processing, and transport of these materials may have a substantial environmental footprint, energy use, and pollution (iii) transporting rolling stock from the manufacturing facility to the operator facility may generate emissions, traffic issues and health and safety issues for the travelers and communities (iv) the project will create employment opportunities for men and women in manufacturing, and logistics.

The operational phase adverse impacts are (i) noise and vibration generated by the operation of rolling stock (ii) generation of packaging waste and plastic waste (iii) advance safety features in new rolling stock can reduce accidents. The operation of new rolling stock will be carried out on the existing tracks. It may cause safety issues during the operation of the new rolling stock (iv) risk of GBV, and harassment may arise during travelling to female passengers. The female staff engaged in operational activities at the stations may also face harassment and other gender related issues during their work by the passengers as well as by the staff. The positive impacts associated with operational phase are (i) improved air quality and ventilation system in metro cars and at the stations (ii) enhanced reliability and frequency of metro services, benefiting commuters (iii) Potential improvements in accessibility

especially for elderly people and people with disabilities (iv) advanced security features (surveillance cameras) in new rolling stock can reduce risk and will help to identify any cases related to criminal activities or related to harassment or gender-based violence (GBV) during travelling in the metro (v) employment opportunities for staff involved in the operation of metro system after the introduction of new metro cars.

The environmental and social impacts associated with the maintenance and decommissioning phase of the project are (i) the waste generated during the maintenance of metro cars including discarded mechanical parts, batteries, chemical waste, lubricants, and wastewater from the washing activities(ii) the waste generated during the decommissioning phase include metallic waste (ferrous, non-ferrous), hazardous materials (asbestos in brakes, insulation or gaskets, PCBs, lead-based paints, lead-acid or other batteries) non-hazardous solid waste (wood, glass, plastic, rubber), chemical waste (lubricants, oils, greases), and electronic waste (control systems, lighting, communication) (ii) workers may be exposed to unsafe and/or unfavorable working environment during the metro car maintenance and decommissioning activities. Untrained workers may cause harm to themselves as well as others due to a lack of awareness and skills. Poor housekeeping practices will lead to health issues. Hazards from handling equipment, lifting heavy materials, electric shock etc. may cause injury to the labor. The cumulative impacts of the project are positive, and the introduction of new rolling stock can lead to long-term reduction in emissions and can improve air quality in the urban environment. Enhanced public transportation can improve overall quality of life in urban areas.

Mitigation Measures

TTC Board of Directors in September 2019 approved (i) Environmental and Social Policy Statement (ii) Environmental and Social Management System (ESMS) Framework (iii) ESMS Planning, monitoring and reporting procedures and (iv) pollution prevention and control plan, waste management plan, occupational health and safety management plan, contractors' management plan and emergency preparedness and response plan. The mitigation measures proposed in the document are based on these documents along with some specific measures for the project.

The mitigation measures for manufacturing and transportation phase of the project are (i) the manufacturer will comply with the requirements specified in the tender documents (ii) the manufacturer will submit a transportation management plan to TTC before the transportation of rolling stock to the TTC facility. The plan will be reviewed and approved by TTC and Bank. (iii) low-emission vehicles will be used, and transport routes will be optimized for supply of the Rolling Stock.

The measures proposed for management of noise and vibration during the operational phase include (i) proper maintenance shall be carried out for rolling stock to minimize the noise and vibration generation (ii) Employees working in noisy environment will use earmuffs/ear plugs to avoid any adverse impact of noise (iii) It will be ensured that operational noise levels not exceed the metro specific international and local noise levels (iv) noise & vibration monitoring shall be conducted as per the proposed environment monitoring plan. The waste to be generated from stations shall be segregated at source and shall be disposed of as per the waste management plan and applicable laws. The measures to manage safety issues include (i) the current operational safety systems and procedures deployed by TTC will be reviewed and verified by the technical team of the supervision consultants before the trial operation of the new rolling stock (ii) regular inspection and maintenance of the rail lines and facilities will be carried out to ensure track stability and integrity in accordance with national and international track safety standards (iii) trainings will be provided to the staff involved in the operation of new metro cars regarding advanced safety features. The measures to

manage gender issues include (i) TTC has implemented a robust policy on sexual harassment to tackle such issues both in the workplace and within the metro system. TTC will ensure sensitization of staff regarding gender-based violence (GBV) and harassment (ii) the Project GRM will be responsive to the complaints related to gender issues from both passengers and staff.

The impacts of maintenance and decommissioning phase will be managed by implementing measures proposed in the waste management plan, pollution prevention plan and health and safety management plan of the TTC included in the ESMP. Specific health and safety measures include (i) child labor and forced labor shall be strictly prohibited at the maintenance sites (ii) training and awareness programs to workers and community located close to maintenance sites will be provided (iii) appropriate personnel protective equipment to workers will be provided (iv) regular inspections and safety drills will be carried out and (v) improved safety standards will be implemented. Other than these measures, TTC will prepare an ESMP for the decommissioning phase of the project which will be reviewed and approved by the Bank before start of decommissioning phase. Plan for proper storage and disposal of waste will be part of the ESMP.

Stakeholder Consultations

The Project-specific consultation meetings with the stakeholders for the Metro Modernization Project (Procurement of the New Rolling Stock for Tbilisi Metro) have been held by TTC on 29th and 30th of August 2024. The purpose of the meetings was to inform stakeholders focus groups on the goals and objectives of the procurement of new rolling stock for Tbilisi Metro Modernization. The TTC has presented to stakeholders the information related to procurement of new rolling stock within the framework of Tbilisi Metro Modernization Project, financed by AIIB. It was mentioned that AIIB considers the critical role of stakeholder engagement throughout the various stages of project implementation to ensure enhanced service quality. Project SEP and GRM have been explained, as well as the AIIB PPM (Project-affected People's Mechanism).

Stakeholders expressed understanding of the benefits related to the purchasing and operating of new metro cars, replacing the old, depreciated rolling stock to improve safety. Concerns were raised about the company's infrastructure and staff preparedness to maintain the new vehicles, about the anticipated procurement timeline, how the new metro cars would enhance passenger service for disabled individuals. In response to stakeholders' queries the TTC representatives have briefed stakeholders on the current condition of the metro infrastructure, provided information on the terms of metro car purchase and delivery. It was further underscored that the new metro cars will significantly improve accessibility and comfort for individuals with special needs.

Recommendations provided by stakeholders have been noted and documented by the TTC. The Project SEP and GRM will ensure that these inputs are carefully considered to better tailor the metro services to the needs of vulnerable groups. TTC representatives have assured the participants that similar meetings will be held regularly, within the SEP implementation process, to foster enhanced stakeholder engagement throughout the project's implementation.

Grievance Redressal Mechanism

The Grievance Redress Mechanism (GRM) has been developed within the Project SEP, based on existing TTC ESMS GRM procedure, to ensure that anyone (TTC consumers/passengers, TTC personnel/workers, other stakeholders or project-affected persons) will be able to submit a grievance to the TTC if they believe a practice is having a detrimental impact on the city community, the

environment, or on their personal safety or quality of life. GRM is described in detail in Section 6. The main objective of GRM is to develop an organizational framework to address and resolve the grievances of individual(s) or community(s), fairly and equitably. The document describes the following processes: submission of grievance, grievance resolution (*Step 1: Receive Complaint; Step 2: Acknowledgement; Step 3: Investigation; Step 4: Resolution; Step 5: Follow Up*), confidentiality and anonymity, AIIB Policy on PPM, disclosure of GRM.

Institutional Arrangements

The institutional arrangements for Project ES management include the following: the TTC HSE Deputy Head (Project ES Focal Point) will be member of Project PIU. The number of EHS officers/inspectors will inspect the metro operations, maintenance and the decommissioning (even if contracted out) processes regularly (on daily/weekly basis), carryout monitoring by using environmental and H&S checklists, issuing corrective/preventive actions for non-compliances.

The supervision consultants engaged by the TTC will appoint competent environmental, social health and safety specialists during the project implementation. The ESHS staff of the Supervision Consultant will oversee the metro operations, maintenance and decommissioning activities on daily/weekly basis and submit monthly EHS reports to TTC PIU EHS Focal Point (Deputy Head of TTC EHS Department). The ESHS staff of the SC will review ESMP every six months and update the ESMP if required and will provide input and advice to TTC PIU on activity specific work plans relating to ESMP. The SC EHS staff will be constantly in contact with the TTC EHS Department to inform promptly on any non-compliance requiring immediate corrective/preventive actions.

Monitoring and Reporting

Monitoring and reporting framework is developed to track the implementation and effectiveness of the mitigation measures per each impact, including key performance indicators (KPIs) and reporting timelines. TTC, through its qualified environmental staff, is responsible for all monitoring activities of the Project. Environmental and social audits will be undertaken throughout the implementation period to ensure that the Project environmental, health and safety and social requirements and the ESMP are implemented appropriately. The auditing process should be designed to identify any non-conformances, providing an opportunity to apply corrective and / or preventative action where appropriate. The audit will be internal and will be carried out by the TTC PIU and supervision consultants on a semiannual basis. The results will be reported to TTC Management, to Tbilisi Municipality and to other stakeholders as appropriate. In addition, TTC PIU will notify and report AIIB, no later than 48 hours after learning of any incident or accident related to the Project which has, or is likely to have, a significant adverse effect on the environment, affected communities, passengers/public or workers, including, inter alia, cases of sexual exploitation and abuse (SEA), sexual harassment (SH), and accidents that result in death, serious or multiple injury. Semiannual ES monitoring reports will be prepared by TTC PIU and will be submitted to AIIB (Lender) and Tbilisi Municipality.

Trainings and Capacity Building

TTC will train staff appropriately and periodically, utilizing progressive training techniques. This procedure is aimed at implementing a policy for managing ESHS awareness and competency training for TTC personnel, including staff involved in operations and maintenance of the new rolling stock. Under the Project's capacity building and institutional strengthening component, TTC will offer specialized training, including for female staff, helping them enhance their skills and perform their

duties more effectively. These trainings will focus on key technical aspects related to urban metro operations, maintenance of modern metro system, safety management and customer services.

Emergency Preparedness and Response Plan

The Emergency Preparedness and Response Plan (EPRP), presented in the document defines responsibilities and actions to be taken by Company's personnel and its ESHS Specialists, Inspectors and Supervisors, in the event of various possible emergencies, which may endanger life, damage property, or harm the environment. The purpose of the EPRP is to help prevent incidents, to assure preparedness in the event incidents occur, and to provide a systematic and orderly response to emergencies (i.e., medical emergency, fire, security issues, hazardous material spill, electrocution, earthquake and flooding in tunnels). The EPRP formulates procedures, responsibilities, and resources for responding to environmental and social incidents related to metro cars rolling stock operations as well as establish communication protocols to notify stakeholders and authorities in case of an emergency.

The estimated ESMP annual budget is 220,000 USD.

1. Introduction

Tbilisi is the capital and largest city of Georgia with population of 1.48million. The urban area of Tbilisi city has a total length of about 35 km from north to south, and the narrowest part is about 5 km wide from east to west, and traffic is concentrated along this city area. The 100% government-owned Tbilisi Transport Company (TTC, former “Tbilisi Metro”, created in 1966, when the first metro line was opened) manages public transportation services in Tbilisi. In 2009, according to the decision of the Tbilisi City Hall, the company was given ownership of municipal buses and related facilities in the form of three bus depots. In 2012 the company incorporated Tbilisi Rope Ways infrastructure and the newly constructed Rike-Narikala Rope Way. In 2018, the company incorporated Tbilisi's parking system with up to 32'000 parking spaces. Currently TTC employs up to 6500 people who work continuously to provide high-quality transport services to Tbilisi population and city guests/tourists, to make their journeys as safe and comfortable as possible.

Over the past decade, Tbilisi has experienced significant urban transformations, particularly in the expansion of its development of residential areas. Furthermore, the country's emphasis on tourism development has heightened the utilization of public transport. Also, based on the urban transformation the city is facing, the growth of private vehicles is causing congestion in urban areas.

The metro system is the backbone of the urban transport system of Tbilisi. Currently, Tbilisi Metro System spreads over 27.3 km with 23 stations on two lines. The Tbilisi Transport Company oversees the metro operations, managing a fleet comprised of 192 metro cars. These metro cars, originally designed with a manufacturing lifecycle of 35 years, have undergone a strategic extension, now extending their operational lifespan to 50 years. The company continually evaluates opportunities for technological upgrades and potential fleet expansions, aiming to uphold high standards of service and contribute to the overall enhancement of Tbilisi's public transportation infrastructure.

1.1 The Project

Based on discussions with Tbilisi Municipality and Tbilisi Transport Company (TTC) the Asian Infrastructure Investment Bank (AIIB) has agreed to provide finances for a project which will enhance the efficiency, reliability, safety and sustainability of the Tbilisi Metro system through the procurement of new rolling stock under the AIIB Green Infrastructure and Technology-enabled Infrastructure financing initiatives. Tbilisi Metro Modernization Project (The Project) considers **procurement of 97 electric metro cars** (comprising 13 units of 4-car and 9 units of 5-car metro trains). This initiative aims to replace the existing metro cars scheduled for decommissioning between 2025 and 2030 due to safety reasons and operational life span limitations.

1.2 Environmental and Social Management Plan – purpose, methodology, scope.

Given the potential environmental and social impacts associated with the Project (classified as Category B according to the AIIB Environmental and Social Framework - ESF), the AIIB requires TTC to prepare **Environmental and Social Management Plan (ESMP)** to mitigate adverse impacts to ensure compliance with AIIB Environmental and Social Standard ESS1 - Environmental and Social Assessment and Management. The AIIB standards ESS2 and ESS3 – are not triggered as no land acquisition, no resettlement and no adverse impacts on livelihood and indigenous peoples are anticipated.

This document represents the **Environmental and Social Management Plan (ESMP)** for the Project, developed to mitigate the negative impacts and enhance the positive impacts of the Project on the city's physical and social environment.

The **purpose** of this ESMP includes the following:

- To identify and assess potential ES risks and impacts associated with the project.
- To propose mitigation measures to avoid, minimize, or compensate adverse impacts.
- To ensure compliance with AIIB's Environmental and Social Framework (ESF) and relevant local regulations.
- To establish monitoring program and reporting mechanisms to track and manage the implementation and effectiveness of mitigation measures throughout the project lifecycle.
- To ensure stakeholder engagement and consultation processes through preparation of project-specific Stakeholders Engagement Plan, including Grievance Redress Mechanism (GRM).

The **methodology** used for the ESMP:

The methodology/approach to developing an Environmental and Social Management Plan (ESMP) involves a systematic process of identifying, assessing, and mitigating potential environmental and social impacts of a project. This also includes stakeholder engagement, continuous monitoring, and adaptive management to ensure that impacts are effectively managed throughout the project lifecycle. The initial screening has been undertaken to determine the need for an ESMP based on the project's scale, location, and potential environmental and social impacts, as well as the Lender's (AIIB) requirements for Category B projects. The Structure/scope of the ESMP has been defined, including identifying key environmental and social issues that need to be addressed, as presented below.

The **structure/scope** of this ESMP is as follows:

- Project description, need for the project, possible alternatives, project timeline.
- Overview of legal and regulatory framework, including local (Georgian) relevant laws and regulations, and the AIIB environmental and social standards, also other international best practices that need to be considered.
- Identification and analysis of potential ES impacts of the project activities related to purchase (mobilization), operation and maintenance of new rolling stock and decommissioning of old rolling stock, negative ES risks and impacts associated with generation of waste, wastewater, noise and vibration, and occupational health and safety risks, also risks related to associated facilities (AFs) and the social risk related to gender-based violence (GBV) in metro.
- Assessment of existing corporate ES management practices at TTC. Proposed mitigation measures and management strategies to address/minimize identified adverse impacts of the Project and enhance positive outcomes, ensuring alignment with AIIB's ESS and Georgian regulations.
- Summary of stakeholder consultations (based on Stakeholder Engagement Plan prepared as part of this ESMP).
- ESMP implementation arrangements in a table format, outlining specific impacts, mitigation/management measures, responsibilities, and timelines, monitoring actions per each item, including frequency of monitoring, responsible party, performance (compliance) indicators.
- Monitoring and reporting framework to track the implementation and effectiveness of the mitigation measures per each impact, including key performance indicators (KPIs) and reporting timelines.

- Training needs for project personnels and stakeholders on ES management practices, capacity building for project staff and relevant stakeholders on the implementation of the ESMP requirements.
- Emergency preparedness plan detailing procedures, responsibilities, and resources for responding to environmental and social incidents related to metro cars rolling stock operations, communication protocols to notify stakeholders and authorities in case of an emergency.
- ESMP implementation budget.

2. Project Description

As mentioned above, the Tbilisi Metro Modernization Project (The Project) considers **procurement of 97 electric metro cars** (comprising 13 units of 4-car and 9 units of 5-car metro trains) with the finances provided by AIIB. This initiative aims to replace the existing metro cars scheduled for decommissioning between 2025 and 2030 due to safety reasons and operational life span limitations.

The Table 1 below presents the **extract** from the Basic Technical Specifications and General Requirements for the Procurement of the Rolling Stock.

Table 1: Metro Cars Basic Parameters and Outer Dimensions

Metro Cars Basic Parameters and Outer Dimensions	
Models of metro trainsets, configuration	<p>Two (2) models of metro trainsets shall be proposed:</p> <ul style="list-style-type: none"> – Trainset composed by 5 cars – Trainset composed by 4 cars <p>The metro trainset shall be equipped with open inter-car passenger gangways with bellows.</p> <p>Both configurations of trainsets (4 or 5 cars) shall provide as far as possible similar solutions in terms of car design, car models, appearance, driving, etc.</p> <p>Three (3) models of cars may be proposed according to the motorization configuration proposed by the supplier:</p> <ul style="list-style-type: none"> - DCT / Metro car with driving cabin and traction system - IM / Intermediate metro cars without traction system - IMT / Intermediate metro cars with traction system <p>4 car trainsets shall be designed for possible extension to 5 cars configuration, adding an additional car in the future. Future extension of 4 car composition and additional intermediate car for a 5 cars train configuration shall be considered, technically anticipated and proposed at the design stage.</p> <p>Each car of the trainset shall be equipped with 2 bogies. The metro trainset shall be bi-directional, with doors on both sides and identical driver's cabs at each end</p>
Overall Dimensions	<p>Platform length is 100m. The metro rolling stock shall have the following general external dimensions:</p> <ul style="list-style-type: none"> – the metro car length shall be between 19.5 and 20.5 meters (with coupling devices); – the maximum length of a metro trainset 5 car model shall be 92.5 to 97.5 meters; with coupling devices – the maximum length of a metro trainset 4 car model, in the range of 79m length, shall anticipate that adding a car in the future, the total maximum length in 5 cars configuration shall be 92.5 to 97.5 meters with coupling devices; – width: up to 2,700 mm; – height: up to 3,650 mm;

	– the variation of height of the floor of the rolling stock from the rail head shall be 1 110 +0 -50 mm (i.e., within the control range of the car body air suspension), in order to comply with the platform height and accessibility requirements.		
Passenger capacity	Capacity of each car	Driving end car	intermediate car
	Max passengers at AW4	255-270	265-280
	Including number of seats	36-42	36-48

2.1 Need for the Project

In general, the **need for new rolling stock** for existing metro lines arises from a variety of factors that impact the efficiency, safety, and overall performance of the metro system. Here are some key reasons:

- **Increased Passenger Demand:** As city grows and populations increases, existing metro lines experience higher ridership. New rolling stock will provide additional capacity to accommodate more passengers comfortably and reduce overcrowding.
- **Aging Equipment:** Over time, the wear and tear on rolling stock leads to increased maintenance needs and higher costs. New trains will replace outdated models, reducing the likelihood of breakdowns and service interruptions. This is a major factor in case of Tbilisi Metro Modernization Project. The existing metro cars, originally designed with a manufacturing lifecycle of 35 years, have undergone a strategic extension, now extending their operational lifespan to 50 years, which is also approaching the expiration date.
- **Improved Technology:** Advances in train technology will enhance operational efficiency, safety, and passenger comfort. New rolling stock will come equipped with modern features like better energy efficiency, advanced safety systems, and more comfortable seating.
- **Operational Efficiency:** New trains will offer improvements in speed, acceleration, and braking, leading to more efficient service and potentially shorter travel times. This will also help in maintaining or improving the frequency of services.
- **Environmental Considerations:** New rolling stock will include eco-friendly technologies, such as electric trains with lower emissions, aligning with sustainability goals and reducing the overall environmental impact of the metro system.
- **Compliance with Standards:** New rolling stock will help ensure that the metro system meets current safety and accessibility standards. Upgrading should address issues like compliance with disability access regulations and other safety requirements.
- **Service Reliability:** New trains will contribute to a more reliable service by minimizing the risk of mechanical failures and delays, which is crucial for maintaining public trust and satisfaction.
- **Cost Efficiency:** While the initial investment in new rolling stock may be significant, it will lead to long-term savings through reduced maintenance costs and improved operational efficiency.

Investing in new rolling stock will be a strategic move to enhance the performance and quality of a metro system, ultimately benefiting both the operators and the passengers who rely on it. Given the findings from various studies, it is anticipated that Tbilisi will experience a substantial increase in

passenger traffic. This anticipation highlights the critical need for a comprehensive infrastructure upgrade to accommodate the growing demand. Concurrently, as the existing Tbilisi metro cars approach the conclusion of their operational life cycle, there arises a compelling urgency for the complete replacement of the metro fleet by the year 2030.

2.2 Project Alternatives – Rationale for Selection

2.2.1 No Project Alternative

The “no-project” alternative is when the project continues to work on the existing operational setup and with the use of old railcars. The “no project” alternative is unfeasible and unacceptable due to the approaching lifecycle expiration date of the car’s operation, after which the safety risks will increase dramatically, and may lead to shut down of metro operations. In response to these imminent challenges, the foremost priority for both the Tbilisi Transportation Company and the City of Tbilisi is the procurement of approximately 200 new metro cars. The acquisition of modern and technologically advanced metro cars is essential not only for meeting current passenger needs but also for enhancing the overall reliability, safety, and capacity of the public transportation network in the years to come.

2.2.2 Rationale for the selection of “new metro cars” alternative:

The selection of new metro cars is a strategic decision that offers a range of economic, environmental, social, and safety benefits. These benefits collectively contribute to the sustainability, efficiency, and overall quality of urban public transportation system. The general rationale that covers these aspects is as follows:

Economic Benefits:

1. *Cost Efficiency:* New metro cars are designed with the latest technology, which leads to lower operational and maintenance costs. This efficiency can result in significant savings over the lifespan of the vehicles.
2. *Energy Efficiency:* Modern metro cars are more energy-efficient, using less electricity per passenger, that reduces the overall operating costs.
3. *Capacity and Frequency:* Newer cars have higher passenger capacities and can be integrated into a system that supports more frequent service. This can increase ridership, leading to higher revenue and reducing the need for additional infrastructure investments.
4. *Long-Term Investment:* Investing in new metro cars is a long-term economic strategy that can support the growth of the city’s infrastructure, contributing to economic development and stability.

Environmental Benefits:

1. *Reduced Emissions:* New metro cars are generally more environmentally friendly, with lower emissions of greenhouse gases and pollutants. This contributes to better air quality in urban areas.
2. *Energy Efficiency:* They incorporate advanced technologies such as regenerative braking, which recaptures energy, reducing the overall energy consumption of the metro system.
3. *Sustainable Materials:* New metro cars are built using sustainable and recyclable materials, reducing their environmental impact over their lifecycle.
4. *Noise Reduction:* Modern cars are designed to operate more quietly, reducing noise pollution in the city, particularly at open sections in densely populated areas.

Social Benefits:

1. *Improved Accessibility:* New metro cars are designed to be more accessible, with features like wider doors, and dedicated spaces for wheelchairs, bicycles, and strollers. This makes public transportation more inclusive for all users.
2. *Comfort and Convenience:* Enhanced comfort features, such as better seating, air conditioning, and real-time information systems, improve the overall passenger experience, encouraging more people to use public transit.
3. *Increased Ridership:* By providing a more reliable, comfortable, and efficient service, new metro cars can attract more users, leading to reduced traffic congestion and a more vibrant, connected urban environment.

4. *Urban Development:* Efficient and reliable metro systems can promote urban development and regeneration, encouraging investment in areas served by the metro and supporting economic growth and social cohesion.

Safety Benefits:

1. *Advanced Safety Features:* New metro cars are equipped with the latest safety technologies, such as automated emergency braking systems, better crashworthiness, and improved fire safety measures.
2. *Enhanced Surveillance:* Modern metro cars include advanced surveillance systems and communication tools that enhance passenger security (including prevention of GBV) and help in the quick response to emergencies.
3. *Reliability:* Newer cars are less likely to experience breakdowns, which reduces the risk of accidents and service disruptions, ensuring a safer and more reliable service for passengers.
4. *Compliance with Standards:* New vehicles are designed to meet or exceed the latest safety standards and regulations, ensuring that the metro system provides a secure environment for passengers.

Conclusion

The alternative of selecting the new metro cars is economically, environmentally and socially feasible and acceptable.

2.3 Associated Facilities

According to AIB ESP (clause 35) the Associated Facilities are activities that are not included in the description of the Project set out in the agreement governing the Project, but which, following consultation with the Client, the Bank determines are: (a) directly and materially related to the Project; (b) carried out, or planned to be carried out, contemporaneously with the Project; and (c) necessary for the Project to be viable and would not be constructed or expanded if the Project did not exist.

Based on screening exercise - there is no associated facility for this project. Only the existing infrastructure (depots, rail lines, power lines and other utilities) will be used for the operation of the Project.

2.4 Implementation Schedule

The timeline for procurement/delivery is presented in table 2 below:

Table 2: Timeline for Procurement/Delivery of Metro Cars

#	Type of Train	Q-ty	2024	2025	2026	2027	2028	2029	2030
1	4-cars train	13	-	-	9	4			
2	5-cars train	9					3	3	3
3	Train simulator	1			1				

3. Legal and Regulatory Framework

The Project will comply with local (Georgian) laws and regulations, permit requirements, and with the Lender's (AIIB) environmental and social standards, as well as with other international best practices that need to be considered.

3.1 National Legislation of Georgia

The following national legislation of Georgia regulates environmental issues and EIA permitting relevant to proposed Project :

- Constitution of Georgia (1995)
- Law on Environmental Protection (1996)
- Law on Soil Protection (1994)
- Law on Subsoil / Minerals (1996)
- Law on Water (1997)
- Law on Protection of Ambient Air (1999)
- Law on Compensations of Damage from Hazardous Substances (1999)
- Law on Waste Management Code (2014)
- **Law on Environmental Assessment Code** (2017, in force since 2018)
- other (as relevant)

“Environmental Assessment Code” (adopted on 01.06.2017, last amended on 11.07.2018, with most requirements in effect since June 2018), guides the evaluation of how potential projects can affect environmental and social resources. Administered by the Ministry of Environment Protection and Agriculture of Georgia, this Code harmonizes Georgian environmental legislation with European legislation. The list of activities subject to environmental impact assessment was modified, extended, and prioritized based on scale and impact significance. The new Code introduces a screening procedure, which requires the project proponent, with Ministry agreement, to identify if the proposed project has potential to cause significant environmental impacts and thus require a full-scale environmental study. The new law replaced the previous Environmental Impact Permit with an Environmental Decision. In addition, the new Code includes new approaches for public participation and information disclosure. One of the main elements is that public participation has to be ensured at all stages of decision-making, not only at the time the EIA report is prepared and disclosed. In addition, information disclosure and public consultations are now the obligation of the Ministry instead of the project developer. ***Annexes 1 and 2 to Environmental Assessment Code do not require special approval or environmental decision (permit) for the new rolling stock in metro, or any renovation/rehabilitation works at the existing metro lines/facilities.***

The following national legislation in Georgia regulates labour and working conditions issues:

- Law on Labour Code (2010)
- Law of Georgia on Work (Occupational) Safety (2019)
- Law of Georgia on Elimination of any Forms of Discrimination (2014)
- Law of Georgia Concerning the Social Protection of Persons with Disabilities, (1995).
- Law of Georgia on Gender Equality (2010).
- Law of Georgia on Trade Unions, 2018.
- Law of Georgia on Public Health, 2007.
- Law of Georgia on the Conflict of Interests and Corruption in Public Service, 1997;
- Law of Georgia on Vocational Education, 2018.

Labour Code of Georgia (2010, last amended in 2018) is administered primarily by the Ministry of Internally Displaced Persons, Labour, Health and Social Affairs, and regulates labour relations between workers and employers. It requires fair reimbursement and the creation of safe and healthy working conditions. The law includes a number of provisions relevant to TTC activities, including employment guarantees, working time, government social insurance, benefits and pensions, age, internal labour regulations (i.e., human resources manual), and occupational health and safety. If the contractor employs expatriate workers, those persons have the same rights and obligations as citizens of Georgia. The law prohibits discrimination based on colour, race, sex, sexual orientation, handicap, religion, political and social status, and other personal characteristics. In terms of **harassment** – the Article 4 of the Law contains the following clauses:

Article 4, Clause 5. Harassment in the workplace (including sexual harassment) is a form of discrimination, in particular, unwanted behavior towards a person on any of the grounds referred to in paragraph 1 of this article, with the purpose or effect of violating the dignity of the person concerned, and creating an intimidating, hostile, degrading, humiliating or offensive environment for him/her.

Article 4, Clause 6. Sexual harassment shall be conduct of a sexual nature towards a person, with the purpose and/or effect of violating the dignity of the person concerned and creating an intimidating, hostile, degrading, humiliating or offensive environment for him/her.

Note: *For the purposes of this Law, conduct of a sexual nature includes uttering and/or addressing a person with phrases of a sexual nature, displaying genitals, and/or any other non-verbal physical conduct of a sexual nature.*

Law of Georgia on Work (Occupational) Safety (2019): this new law defines basic requirements and general principles of occupational health and safety. The law imposes a general obligation on employers to provide employees with a safe and healthy working environment and to inform workers of the potential risks their jobs may present to their health and safety. Measures that must be taken include, but are not limited to, training and information campaigns as well as adoption of relevant preventive measures. The law includes requirements for organizing and managing health and safety programs, providing emergency care and services, and responding to accidents. Other requirements include controlling access to hazardous workplaces, providing personal protective equipment at no charge to workers, and medical examinations. According to this law, the Occupational Health and Safety (OHS) Risk Assessment and OHS Management Plan are required during any construction (or reconstruction) works.

3.2 International Conventions and Best Practices

Georgia is a party to the following international legal instruments relating to environmental and social issues:

- (Rio) Convention on Biological Diversity, 1992.
- Convention concerning the Protection of the World Cultural and Natural Heritage (World Heritage Convention; 1972; universal);
- Aarhus Convention on Access to Information, Public Participation in Decision Making and Access to Justice in Environmental Matters, 1998.
- Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, 1989.
- European Convention on the Protection of the Archaeological Heritage, 1992.
- Convention for the Safeguarding of Intangible Cultural Heritage, 2003.

- Framework Convention on Climate Change, 1992.
- Framework Convention on Climate Change, Kyoto Protocol, 1997.
- Vienna Convention for the Protection of the Ozone Layer, 1985.
- Montreal Protocol on Substances That Deplete the Ozone Layer, 1990.
- Geneva Convention on Long-Range Transboundary Air Pollution, 1979.
- Basel Convention on the Control of Transboundary Movements of Hazardous Wastes, 1989.
- EC Directive on Water Quality for Human Consumption, 1998
- other, as relevant

Georgia has also ratified the following International Labour Organization (ILO) core labour standards:

- Forced Labour Convention (C029)
- Abolition of Forced Labour Convention (C105)
- Child Labor Convention (C182)
- Discrimination (Employment and Occupation) Convention (C111)
- Freedom of Association and Protection of the Right to Organize Convention (C 087)
- Right to Organize and Collective Bargaining Convention (C098)
- Equal Remuneration Convention (C100)
- Minimum Age Convention (C138).

The international best practices that will be considered are The World Bank Group (IFC) General EHS Guidelines, and the IFC Industry Sector Guidelines for Infrastructure (IFC EHS Guidelines Railways), also EU noise standards for metro operations.

3.3 Lender's Safeguards - AIIB ESF

For the proposed Project the **Asian Infrastructure Investment Bank (AIIB)** will be the Lender. The AIIB Environmental and Social Framework (ESF) incorporates the Bank's policy addressing environmental and social impacts. The AIIB Environmental and Social Policy (ESP), as part of ESF, comprises mandatory environmental and social requirements for each Project, in particular three associated mandatory Environmental and Social Standards (ESSs) setting out requirements applicable to Bank Clients on, respectively:

- ESS 1: Environmental and Social Assessment and Management;
- ESS 2: Land Acquisition and Involuntary Resettlement; and
- ESS 3: Indigenous Peoples.

The proposed Project is classified under Category B according to the AIIB Environmental and Social Framework - ESF), the AIIB requires preparation of **Environmental and Social Management Plan (ESMP)** to mitigate adverse environmental and social impacts to ensure compliance with AIIB Environmental and Social Standard ESS1 - Environmental and Social Assessment and Management (which is triggered). The AIIB standards ESS2 and ESS3 – are not triggered as no land acquisition, no resettlement and no adverse impacts on livelihood and indigenous peoples are anticipated.

The AIIB ESP requires to develop measures to manage and mitigate the risks and impacts and reflect them in an ESMP, all as required under ESS 1. In order to prepare the ESMP for the Project, it is required to: (a) identify the Project's potentially adverse impacts; (b) determine requirements so that those impacts are addressed in an effective and timely manner; (c) describe the means for meeting those requirements; (d) disclose the draft ESMP in the manner required under *ESP Section 65, Environmental and Social Information Disclosure by the Client*; and (e) engage in consultation on the ESMP in the manner required under *ESP Section VII, Disclosure, Consultation, Grievances and Project-affected People's Mechanism, Section B, Consultation*.

4. ES Impact Identification and Analysis

This section of the ESMP identifies and assesses potential ES impacts of the project activities related to purchase (mobilization), operation and maintenance of new rolling stock and decommissioning of old rolling stock. Negative ES impacts associated with the project activities are generation of waste including but not limited to hazardous waste, wastewater, noise and vibration, and occupational health and safety risks and the social risk related to gender-based violence (GBV) in metro. It also provides brief analysis/prioritization of the risks and impacts identified.

4.1 Identification of Impacts

Based on desk study of the common impacts for the metro sector, and based on TTC corporate experience of metro operation, the following impacts have been identified for the project activities related to purchase (mobilization), operation and maintenance of new rolling stock and decommissioning of old rolling stock:

The anticipated adverse impacts from the Project are presented below. Where impacts are positive – indicated specifically, per each positive impact.

Manufacturing and Transportation of New Rolling Stock

Environmental Impacts:

- **Manufacturing Emissions:** Production of new rolling stock involves substantial industrial activities, including the fabrication of metal components, assembly of electrical systems, and painting. These processes emit significant amounts of greenhouse gases (GHGs) like CO₂, as well as other pollutants, contributing to climate change and local air quality issues.
- **Resource Consumption:** Significant amounts of raw materials, including steel, aluminum, plastics, and rubber. The extraction, processing, and transport of these materials can have a substantial environmental footprint, energy use, and pollution.
- **Transport Emissions and Traffic Impact:** Transporting rolling stock from the manufacturing facility to the metro line typically by road, rail, or sea, generates emissions from fossil fuel consumption, adding to the overall environmental impact of the project.

Social Impacts:

- **Job Creation (Positive Impact):** The project will create employment opportunities for men and women in manufacturing, and logistics.
- **Labor and Working Conditions:** Workers equal rights, non-discrimination, occupational health and safety (OHS) should be in compliance with Lender's requirements during manufacturing, transportation (traffic safety, workers safety), and along the supply chain.
- **Community Disruption:** Potential disruption (from traffic, noise, dust, safety risks) in communities near manufacturing plants and during transportation.

Operation of New Rolling Stock

Environmental Impacts:

- **Energy Consumption:** Depending on the energy source, operations can contribute to GHG emissions. If powered by electricity from renewable sources, the environmental footprint could be minimal.
- **Noise and Vibration:** Noise and vibration generated by the operation of rolling stock.
- **Air Quality (Positive Impact):** Improved air quality and ventilation system in metro cars and at the stations is anticipated after the introduction of new rolling stock. .

- Generation of Waste: Packaging waste and plastic waste will be generated at the stations during the operation of metro cars.

Social Impacts:

- Improved Service (Positive Impact): Enhanced reliability and frequency of metro services, benefiting commuters.
- Accessibility (Positive Impact): Potential improvements in accessibility especially for elderly people and people with disabilities.
- Security (Positive Impact): Advanced security features (surveillance cameras) in new rolling stock can reduce risk and will help to identify any cases related to criminal activities or related to harassment or gender-based violence (GBV) during travelling in the metro.
- Employment opportunity (Positive Impact): There will be more employment opportunities for staff involved in the operation of metro system after the introduction of new metro cars.
- Safety: Advanced safety features in new rolling stock can reduce accidents. The operation of new rolling stock will be carried out on the existing tracks. It may cause safety issues during the operation of the new rolling stock.
- Gender Issues: The metro system in Tbilisi is safe and reliable and females prefer to travel through the metro. However, risk of GBV and harassment issues may arise during travelling to female passengers. The female staff engaged in operational activities at the stations may also face harassment and other gender related issues during their work by the passengers as well as by the staff.

Maintenance of New Rolling Stock

Environmental Impacts:

- Waste Generation: The waste generated during the maintenance of metro cars including discarded mechanical parts, batteries, chemical waste, lubricants, and wastewater from the washing activities.
- Resource Use: Consumption of resources for maintenance activities.
- Health and safety of Workers: Workers may be exposed to unsafe and/or unfavorable working environment during the metro car maintenance activities. Untrained workers may cause harm to themselves as well as others due to a lack of awareness and skills. Poor housekeeping practices will lead to health issues. Hazards from handling equipment, lifting heavy materials, electric shock etc. may cause injury to the labor.

Social Impacts:

- Employment: Job opportunities in maintenance.

Decommissioning of Old Rolling Stock

Environmental Impacts:

- Waste Management: Handling and disposal of old rolling stock materials, including metallic waste (ferrous, non-ferrous), hazardous materials (asbestos in brakes, insulation or gaskets, PCBs, lead-based paints, lead-acid or other batteries) non-hazardous solid waste (wood, glass, plastic, rubber), chemical waste (lubricants, oils, greases), and electronic waste (control systems, lighting, communication).
- Recycling: Opportunities for recycling metals and other materials.
- Health and safety: Workers may be exposed to unsafe and/or unfavorable working environment during the metro car decommissioning activities and management of different types of waste.

Social Impacts:

- Community Impact: Possible noise and dust impact on communities near decommissioning sites.

Cumulative Impacts

Environmental Impacts:

- Long-term Emissions Reduction (Positive Impact): Replacement of old rolling stock with more efficient models can lead to long-term reductions in emissions.
- Urban Air Quality (Positive Impact): Improved air quality in the urban environment.

Social Impacts:

- Quality of Life (Positive Impact): Enhanced public transportation can improve overall quality of life in urban areas.
- Economic Benefits (Positive Impact): Potential for long-term economic benefits due to improved public transportation infrastructure.

4.2 Analysis and Prioritization of the Impacts Identified

An Impact Identification and Significance Matrix is a tool used to assess the potential environmental impacts of the Project. The matrix (Table 3) helps to identify the environmental aspects, evaluate the potential impacts, and determine their significance based on factors like magnitude, duration, and reversibility.

Explanation of Matrix Components:

- Environmental Aspect: Project component or phase that might cause environmental impacts.
- Potential Impact: The likely environmental or health-related outcome of the environmental aspect.
- Magnitude: The scale or extent of the impact (e.g., High, Medium, Low).
- Duration: How long the impact will last (e.g., Short-term, Medium-term, Long-term).
- Reversibility: The ability to reverse the impact (e.g., Reversible, Irreversible).
- Significance: Overall significance of the impact based on the combination of magnitude, duration, and reversibility (e.g., High, Moderate, Low). This is a key column as it helps prioritize which impacts require more attention or stringent mitigation.
- Mitigation Measures: Actions taken to reduce or eliminate the impact (e.g., Recycling, safe disposal, PPE for workers, etc).

Table 3: Impact Identification and Significance Matrix

Environmental Aspect	Potential Impact	Magnitude	Duration	Reversibility	Significance
<i>Manufacturing and Transportation of New Rolling Stock</i>	Emissions, Resources, Jobs, H&S, Traffic safety Communities	Low	Short-term	Reversible	Low
<i>Operation of New Rolling Stock</i>	Energy Noise & Vibration Air Quality Improved: service, accessibility, safety, security, employment opportunity	Medium	Long-term	Reversible	Moderate
<i>Maintenance of New Rolling Stock</i>	Waste Generation, Resource Use Employment, OHS	Low	Short-term	Reversible	Moderate

<i>Decommissioning of Old Rolling Stock</i>	Waste Management, Recycling Community Impact	Medium	Short-term	Reversible	Moderate
<i>Cumulative Impacts</i>	Emission Reduction Improved Air Quality Quality of Life Economic Benefits	Medium	Long-term	Reversible	Positive Moderate

When analyzing and prioritizing the risks and impacts associated with the introduction of new rolling stock in existing metro lines, it's essential to consider both the significance of the impacts and the likelihood of their occurrence. A brief analysis and prioritization is provided in Table 4.

Table 4: Impact Analysis and Prioritization

	High Priority	Medium Priority	Low Priority
<p>1.Operation of New Rolling Stock</p> <p>Overall high priority due to immediate and long-term impacts on the environment and society.</p>	<p>Environmental Impact: Energy Consumption If the energy source is non-renewable, it could lead to significant GHG emissions. Using renewable energy could greatly reduce the environmental impact. Energy efficiency and sourcing renewable energy is crucial.</p> <p>Social Impact: Improved Service Enhancing the reliability and frequency of metro services directly impacts the daily lives of commuters, making this a high-priority social benefit.</p> <p>Social Impact: Safety Advanced safety features in the new rolling stock can significantly reduce accidents, making this a critical priority. The operation of new rolling</p>	<p>Environmental Impact: Air Quality The potential improvement in air quality from replacing older models is important but dependent on the extent of the upgrades.</p> <p>Social Impact: Accessibility Improved accessibility is essential, particularly for vulnerable populations, though it may not be as immediate as service improvements.</p> <p>Social Impact: Improved Security Advanced security features (surveillance cameras) in new rolling stock can reduce social risk related to harassment and gender-based violence (GBV) in metro</p>	<p>Environmental Impact: Noise Pollution Noise pollution is a concern, but modern rolling stock can often mitigate this impact with better design.</p> <p>Social Impact: Employment Opportunity: - can be considered for the female in the operational services</p>

	stock will be carried out on the existing tracks. The current safety procedures deployed will be verified before the trial operation of the new rolling stock.		
<p>2. Decommissioning of Old Rolling Stock</p> <p>Overall high priority for managing environmental and social risks.</p>	<p>Environmental Impact: Waste Management Proper disposal of hazardous materials including metallic waste (ferrous, non-ferrous), hazardous materials (asbestos in brakes, insulation or gaskets, PCBs, lead-based paints, lead-acid or other batteries) is crucial to avoid significant environmental harm.</p>	<p>Environmental Impact: Recycling Recycling materials can reduce environmental impact, but the effectiveness depends on the processes in place.</p> <p><i>Occupational health and safety</i> <i>Community health and safety</i></p>	<p>Social Impact: Community Impact Communities near decommissioning sites may face challenges (noise, dust), making it necessary to manage these impacts carefully.</p>
<p>3. Purchase (mobilization) of New Rolling Stock</p> <p>Overall medium to high priority due to the significant environmental footprint of manufacturing.</p>	<p>Environmental Impact: Manufacturing Emissions The GHG emissions from manufacturing are significant and should be minimized by using cleaner production processes.</p> <p>Environmental Impact: Resource Consumption The use of raw materials, especially non-renewable ones, has a considerable environmental impact, necessitating efficient use and sourcing.</p>	<p>Social Impact: Community Disruption Disruptions during manufacturing and transportation can affect communities, but these are generally short-term impacts.</p> <p>Environmental Impact: Transport Emissions Transportation emissions are a concern but often represent a smaller portion of the overall environmental impact.</p>	<p>Social Impact: Job Creation While job creation is positive, it is usually a short-term impact during the mobilization phase.</p>
<p>4. Maintenance of New Rolling Stock</p> <p>Overall medium priority due to ongoing operational repairs.</p>		<p>Environmental Impact: Waste Generation Managing waste, especially hazardous materials, is important to minimize environmental harm.</p> <p>Health and Safety</p>	<p>Environmental Impact: Resource Use Resource consumption during maintenance is ongoing but generally less impactful than manufacturing.</p>

		<p>Workers may be exposed to unsafe and/or unfavorable working environment during the metro car maintenance activities. Untrained workers may cause harm to themselves as well as others due to a lack of awareness and skills.</p> <p>Social Impact: Employment Job creation in maintenance is beneficial but less critical than safety and environmental concerns.</p>	
<p>5.Cumulative Impacts</p> <p>Overall high priority, especially for long-term sustainability and quality of life improvements.</p>	<p>Environmental Impact: Long-term Emissions Reduction (Positive Impact) This is a primary long-term benefit, essential for meeting sustainability goals.</p> <p>Social Impact: Quality of Life (Positive Impact) Improved public transportation can significantly enhance the safety and quality of life, making this a high-priority positive impact.</p>	<p>Environmental Impact: Urban Air Quality (Positive Impact) The important improvements in urban air quality may take time to be considered fully.</p> <p>Social Impact: Economic Benefits (Positive Impact) Economic benefits are significant but more long-term, thus given a medium priority.</p>	

5. Mitigation Measures

5.1 General

This section of ESMP proposes mitigation measures and management strategies to address/minimize identified adverse impacts of the Project and enhance positive outcomes, ensuring alignment with AIB's ESS and Georgian regulations.

The following documents have been developed and approved by TTC Board of Directors in September 2019 and the mitigation measures proposed in the document are based on these documents along with some specific measures for the project.

- TTC Environmental and Social Policy Statement
- TTC Environmental and Social Management System (ESMS) Framework
- TTC ESMS Planning Procedure
- TTC ESMS Monitoring and Reporting Procedure
- TTC Pollution Prevention and Control Plan
- TTC Waste Management Plan
- TTC Contractors Management Plan
- TTC Occupational Health & Safety Plan
- TTC EHS Programs – Specific per each facility/site
- TTC Emergency Preparedness and Response Plan

In accordance with the AIB ESF requirement ESS1, a mitigation hierarchy approach has been applied in the ES assessment and risk management strategy, by: (a) anticipating and avoiding risks and impacts; (b) where avoidance is not feasible, minimizing or reducing risks and impacts to acceptable levels; (c) once risks and impacts have been minimized or reduced, mitigating; and (d) where residual risks or impacts remain, compensating for or offsetting them, where technically and financially feasible.

5.2 Mitigation Measures

The following mitigation/management measures have been selected to address/minimize identified adverse impacts and enhance positive outcomes:

5.2.1 Manufacturing of New Rolling Stock

- Implementing cleaner production techniques, using low-emission technologies
- Use recycled materials, optimize material use
- Use low-emission vehicles, optimize transport routes for supply of the Rolling Stock
- The manufacturer will comply with the requirements specified in the tender documents.
- The manufacturer will submit a transportation management plan to TTC before the transportation of rolling stock to the TTC facility. The plan will be reviewed and approved by TTC and Bank.

5.2.2 Operation of New Rolling Stock

- Resource Consumption: Use renewable energy sources, implement energy-efficient technologies
- Noise and Vibration:

- Noise and vibration mitigation measures are integrated with the project design to minimize noise and vibrations due to Rail & wheel interaction, pantograph, aerodynamic noise, etc.
- Noise barriers shall be installed at the sensitive receptors
- Sound-dampening materials should be used
- Proper maintenance shall be carried out for rolling stock to minimize the noise and vibration generation
- Employees working in noisy environment will use earmuffs/ear plugs to avoid any adverse impact of noise
- It will be ensured that operational noise levels not exceed the metro specific international and local noise levels.

- Noise & vibration monitoring shall be conducted as per the proposed environment monitoring plan

- Waste Generation
 - Waste to be generated from stations shall be segregated at source and shall be disposed of as per the Waste Management plan and applicable law.
- Safety Issues:
 - The current operational safety systems and procedures deployed by TTC will be reviewed and verified by the technical team of the supervision consultants before the trial operation of the new rolling stock.
 - Regular inspection and maintenance of the rail lines and facilities will be carried out to ensure track stability and integrity in accordance with national and international track safety standards.
 - Trainings will be provided to the staff involved in the operation of new metro cars regarding advanced safety features.
- Gender Issues
 - TTC has implemented a robust policy on sexual harassment to tackle such issues both in the workplace and within the metro system.
 - TTC will ensure sensitization of staff regarding gender-based violence (GBV) and harassment.
 - The Project GRM will be responsive to the complaints related to gender issues from both passengers and staff. All such complaints will be recorded.

5.2.3 Maintenance of New Rolling Stock

- Implement waste management measures provided below during the maintenance of rolling stock.
- Optimize resource usage, use sustainable materials
- Health and Safety:
 - Child labor and forced labor shall be strictly prohibited at the maintenance sites.
 - Training and awareness programs to workers and community located close to maintenance sites will be provided
 - Appropriate personnel protective equipment to workers will be provided
 - Regular inspections and safety drills will be carried out.
 - Improved safety standards will be implemented

5.2.4 Decommissioning of Old Rolling Stock

- TTC will prepare an ESMP for the decommissioning phase of the project which will be reviewed and approved by the Bank before start of decommissioning phase. Plan for proper storage and disposal of waste will be part of the ESMP.
- Strict control over H&S measures, including toolbox talks, work permits, PPE, etc. Control over Contractor (if contracted out) through contract requirements for H&S.

At the same time, to mitigate the identified impacts, the existing TTC ESMS tools will be used/applied. Considering more industrial character of environmental and social aspects related to 3) Maintenance Phase and 4) Decommissioning Phase, - the mitigation measures for these two phases in terms of **Waste Management, Pollution Prevention/Control and Occupational H&S** in more details are presented below. The Manufacturing Phase is not considered here because is covered by procurement/contract requirements. It should be also noted that the Decommissioning phase with high probability will be contracted out to Authorized Contractor and TTC will control the Contractor through incorporating these measures into the contract and then through monitoring of the implementation.

5.3 Waste Management

To mitigate the environmental impact from waste generation the corporate Waste Management Plan is developed (as part of TTC ESMS) – subject to update and approval by the Ministry of Environment every three years. Additionally, worker safety and environmental monitoring play crucial roles in ensuring that the decommissioning process is conducted safely and sustainably. The project-specific WMP will consider the following mitigation measures during decommissioning, which will be included into contract if decommissioning (dismantling) is contracted out to authorized contractor:

1. Segregation and Recycling:
 - Metal Recycling: Ferrous and non-ferrous metals are segregated and sent to recycling facilities. This reduces the need for raw material extraction and minimizes environmental impact.
 - Plastic and Rubber Recycling: Where feasible, plastics and rubber are sorted and recycled. However, this often depends on the type of plastic and local recycling capabilities.
2. Hazardous Waste Management:
 - Asbestos Removal: Asbestos-containing materials are handled by certified professionals and disposed of in specialized landfills designed to contain hazardous waste. TTC has special experience of dealing with authorized contractor for asbestos removal during rehabilitation of metro stations, including special procedure for asbestos removal approved by the Ministry of Environment.
 - PCB Disposal: Components containing PCBs are treated as hazardous waste and are incinerated or disposed of in specially designed landfills.
 - Lead-Based Paint: Surfaces with lead-based paint are either stripped and treated as hazardous waste or encapsulated before disposal.

3. Chemical Waste Treatment:
 - Oils and Lubricants: These are drained and collected separately. They can be re-refined, recycled, or treated as hazardous waste if contamination is present.
 - Coolants and Refrigerants: These substances are collected and treated according to environmental regulations. For example, Freon is often reclaimed and recycled to prevent release into the atmosphere.
4. E-Waste Recycling:
 - Electronic Components: E-waste is sent to specialized recycling facilities where valuable metals are recovered, and hazardous substances are managed safely.
5. Decontamination and Safe Disposal:
 - Decontamination: Areas contaminated with hazardous substances are cleaned, and the resulting waste is treated as hazardous.
 - Controlled Landfilling: Materials that cannot be recycled, such as certain types of treated wood, are disposed of in controlled landfills to minimize environmental impact. Local laws will be followed.
6. Environmental Monitoring:
 - Regular Monitoring: During and after the decommissioning process, environmental monitoring will be conducted to ensure that no contaminants are released into the soil, water, or air.
7. Worker Safety Measures:
 - Personal Protective Equipment (PPE): Workers handling hazardous materials will be provided with appropriate PPE, such as respirators, gloves, and protective suits.
 - Training: Workers will receive training in hazardous material handling, waste segregation, and emergency procedures to minimize risks during decommissioning.

5.4 Pollution Prevention and Control

This set of measures is part of TTC ESMS necessary to prevent pollution of water, air and soil, to be adopted by the TTC for the maintenance of new rolling stock (and TTC's contractors for decommissioning) in compliance with the AIB ESS and the WB General EHS Guidelines. The existing TTC ESMS Pollution Prevention and Control Plan consist of the following components: Wastewater Management, Spill Prevention and Control, Hazardous Materials Storage and Handling, Air Emissions Management and Dust Control, Noise Management

1. Wastewater:
 - Prepare a Method Statement on the control and management of wastewater at maintenance (decommissioning) facility, including providing for the appropriate disposal of contaminated water.

- No grey water runoff or uncontrolled discharges from the working areas (including wash down areas) to adjacent or nearby water bodies shall be permitted.
- Discharge water containing environmental pollutants into the treatment facility (separator) or a conservancy tank, where appropriate, for removal from site.
- Prevent runoff loaded with sediment and other suspended materials from the site/working areas from discharging to adjacent watercourses and/or stormwater infrastructure.
- Potential pollutants of any kind and in any form shall be kept, stored and used in such a manner that any escape can be contained.
- Wash down areas must be approved by the Project Manager (Head of Department) and the ESHS Manager and shall not pollute the surrounding environment.
- Notify the Project Manager (Head of Department) and ESHS Manager of any pollution incidents on site.

2. Spill Prevention and Control

- Preparation of Job Safety Analysis to manage workplace risks.
- Implement a hazard study to identify all potential causes of chemical leakage and spillage or hazards to workers and ensure that appropriate protective systems are implemented.
- Precautions will be taken by the construction staff to minimize the risk of spillage of pollutants, such as fuels, oils, greases and other chemicals associated with the maintenance or decommissioning operations;
- Petroleum product spillages will be immediately cleaned up with appropriate absorbent materials. The absorbent will be kept in an appropriate container marked 'regulated waste' for a waste contractor licensed to receive such waste;
- Spill kits including containment and treatment equipment and materials will be provided at the site/facility, near where equipment is being used. All personnel will be familiar with the use of the clean-up kit and dispose of waste in the prescribed manner;
- Job safety analysis, safe work instructions, controlled laydown areas and provision of appropriate supervision to be undertaken during maintenance and decommissioning works;
- Hazardous substances handling is to be carried out by suitably trained personnel only;
- Store all fuel, oil and chemicals (if any) in the designated secure area only. Conduct regular inspections of vehicles to identify and repair leaks or damaged fuel/lubricant lines. Repair vehicles only in specially designated maintenance areas.
- Training will be provided for handling and storage of hazardous substances to all personnel; and Copies of MSDS (materials and supplies data sheet) for all hazardous materials to be maintained on-site.

Corrective Action:

In the event of an incident or failure to comply, a selection of the following actions will be undertaken as appropriate:

- investigate why the incident occurred and investigate and implement mitigating measures;
- ensure safety information provided is adequate and up-to-date and revise regularly as appropriate;
- ensure employees, contractors and visitors to the site are familiar with the procedures and policies relevant to their positions;
- ensure safety directives and procedures are enforced; and ensure safety documents are readily available to everyone on the site.

3. Hazardous Materials Storage and Handling

- All hazardous materials (oils, fuels and chemicals) which are required to be located at a construction site will be stored on a concrete or other impervious base and surrounded by a bund which can contain 110% of the volume of all stored substances. The bund will be checked regularly for cracks or leaks.
- Sewage, sullage and other wastewater generated at the maintenance facility or decommissioning site (other than stormwater runoff) will be collected and transported for treatment at a facility (such as a municipal wastewater treatment plant) of adequate capacity and licensed to handle such wastes.
- Any spillage of hazardous materials will be contained and cleaned up immediately and disposed of appropriately by a licensed contractor.
- Designate, demarcate, fence off and secure all storage areas to minimize the risk of crime; storage areas should be safe from access by unauthorized persons;
- Provide fire prevention measures at all storage facilities;
- Store all hazardous materials such as oils, paints, thinners, fuels, chemicals, etc. in properly constructed and impermeable bounded areas. Hazardous materials must not be allowed to contaminate the subsurface or enter into drainage systems.
- Acquire MSDSs for all chemicals and hazardous substances used on site. Training on environmental impacts of chemicals and hazardous substances and PPE required to worn must be provided to the users.
- Hazardous material storage areas must be signposted clearly

4. Air Emissions Management and Dust Control

To ensure that the Company activities, including maintenance and decommissioning, has a minimal adverse impact on air quality, the following practices shall be followed:

- Covering of material loads on trucks in and out of the decommissioning area to prevent dust releases.
- Enclosure of dust generating activities where operationally practical and efficient.
- Implementation of appropriate dust suppression or capture technology where enclosure is not practical.

- Efficient operation of machinery, equipment and vehicles to minimize exhaust emissions.
- Low sulfur content diesel will be used as fuel for generator sets to control emission of SO₂.
- Any vehicle or machinery whose exhaust exceeds 5000 ppm of CO₂ shall be refused.
- Clean up of residues and spills in a timely manner.
- Vehicle inspection and maintenance program for all on site construction vehicles.

5.5 Occupational Health & Safety

Major Occupational Health & Safety (OHS) Rules for Metro Trains Maintenance Depot

1. General Safety Rules:

- **Personal Protective Equipment (PPE):** All personnel must wear appropriate PPE at all times. This includes safety helmets, high-visibility vests, gloves, steel-toed boots, and safety goggles. Hearing protection must be used in high-noise areas.
- **Access Control:** Only authorized personnel are allowed in the maintenance areas. Visitors must be accompanied by a certified employee and must adhere to all safety protocols.
- **Housekeeping:** Work areas must be kept clean and free of debris. Tools and equipment should be stored in designated places when not in use. Spills must be cleaned immediately to prevent slips, trips, and falls.
- **Emergency Procedures:** Employees will be familiar with the emergency procedures, including fire evacuation routes, first aid stations, and the locations of emergency shutoff switches. Regular drills should be conducted to ensure readiness.

2. Machine and Equipment Safety:

- **Lockout/Tagout (LOTO):** Before performing maintenance or repair work on any equipment, the power source must be isolated, and a lockout/tagout procedure must be implemented to prevent accidental energization. Only authorized personnel can apply and remove LOTO devices.
- **Machine Guarding:** All machinery must be equipped with proper guards to protect employees from moving parts, flying debris, and other hazards. Guards must not be removed or bypassed except during authorized maintenance, and they must be replaced before the equipment is returned to service.
- **Tool Safety:** Tools must be inspected regularly for damage and defects. Damaged tools must be removed from service immediately. Proper use of tools is mandatory, and makeshift or inappropriate tools are strictly prohibited.
- **Vehicle and Crane Operations:** Only trained and certified operators are allowed to operate forklifts, cranes, and other heavy machinery. These vehicles must be inspected daily before use, and any defects must be reported immediately. Pedestrians have the right of way at all times, and speed limits within the depot must be strictly followed.

3. Electrical Safety:

- **Qualified Personnel:** Only qualified electricians are permitted to work on electrical systems. Non-qualified employees must stay clear of live electrical circuits and equipment.
- **Electrical Isolation:** All electrical equipment and circuits will be de-energized before any maintenance or repair work is performed. Portable electrical tools will be inspected for proper grounding and insulation before use.
- **High-Voltage Areas:** High-voltage areas will be clearly marked with warning signs, and access must be restricted to authorized personnel. Insulating mats and barriers must be used where necessary.

4. Chemical and Hazardous Materials Handling:

- **Material Safety Data Sheets (MSDS):** MSDS for all chemicals and hazardous materials used in the depot will be readily accessible to all employees. Employees will be trained in the safe handling, storage, and disposal of these materials.
- **Spill Containment:** Proper spill containment equipment will be available, and employees must be trained on spill response procedures. Spills must be reported immediately, and the area should be evacuated if necessary.
- **Ventilation:** Proper ventilation will be maintained in areas where hazardous materials are used or stored to prevent the buildup of dangerous fumes. Respiratory protection must be used where required.

5. Ergonomics and Manual Handling:

- **Lifting Techniques:** Employees will be trained in proper lifting techniques to prevent musculoskeletal injuries. Mechanical aids such as hoists and forklifts should be used whenever possible for heavy loads.
- **Workstation Design:** Workstations will be ergonomically designed to reduce strain and injury. Adjustable chairs, tool racks, and other aids should be used to optimize comfort and efficiency.

6. Fire Safety:

- **Fire Prevention:** Flammable materials will be stored in designated areas away from ignition sources. Smoking is strictly prohibited in the depot.
- **Fire Extinguishers:** Fire extinguishers must be readily accessible and regularly inspected. Employees must be trained in the proper use of fire extinguishers.
- **Hot Work Permits:** Any welding, cutting, or other hot work requires a hot work permit. Fire watch personnel will be present, and appropriate fire suppression equipment must be on hand.

7. Health and Welfare:

- **First Aid:** First aid kits will be available throughout the depot, and trained first aiders must be present during all shifts. Employees must report all injuries and near misses immediately, regardless of severity.

- Rest Breaks: Employees will take regular rest breaks to prevent fatigue, particularly when performing repetitive tasks or working in hot or cold environments.
- Mental Health: The depot will provide resources for mental health support, and employees should be encouraged to seek help if needed.

8. Training and Competency:

- Regular Training: Employees will undergo regular OHS training relevant to their job roles. Training should include both initial orientation and ongoing refresher courses.
- Competency Assessments: Regular assessments will be conducted to ensure employees remain competent in their roles, particularly in relation to safety-critical tasks.

9. Incident Reporting and Investigation:

- Reporting Procedures: All incidents, including near misses, will be reported immediately. An investigation should be conducted to identify the root cause and prevent future occurrences.
- Corrective Actions: Following an investigation, corrective actions will be implemented promptly. Employees should be informed of any changes to procedures or practices resulting from the investigation.

10. Continuous Improvement:

- Safety Audits: Regular safety audits will be conducted to identify potential hazards and areas for improvement. Employee feedback should be actively sought and considered in safety planning.
- Safety Meetings: Regular safety meetings will be held to discuss safety performance, share lessons learned, and reinforce the importance of OHS in the workplace.

By adhering to these rules, the metro trains maintenance depot will ensure a safe working environment for all employees, minimizing the risk of accidents and promoting a culture of safety throughout the organization.

6. Stakeholder Consultations

6.1 Stakeholder Engagement

The **Stakeholder Engagement Plan (SEP)** is part of the present Environmental and Social Management Plan (ESMP) and was prepared for the Project as a stand-alone document (please see “TTC SEP for the Metro Modernization Project”). The overall objective of the Stakeholder Engagement Plan (SEP) is to define a program for stakeholder engagement, including public information disclosure and consultation throughout the procurement, purchase and operation of the new rolling stock for Tbilisi Metro. The SEP outlines the steps taken to establish a well-functioning **grievance redress mechanism** within the framework of Tbilisi Metro Modernization Project. By collecting data and addressing passenger concerns promptly, the TTC management can make informed decisions, engage with the community, and foster a culture of continuous improvement.

A comprehensive approach has been used for **identifying, mapping and analyzing the stakeholders**. during the preparation of this stakeholder engagement plan. After evaluation of interests and level of influence of the stakeholders, their possible expectations have been defined and the preliminary assessment of the Project impact on each stakeholder category has been performed. Three **focus groups** 1) the City and the Company; 2) public transport users (including vulnerable groups); 3) media, NGOs and others, - were established to streamline communication within a small cross-sector team of engaged stakeholders, enabling the exchange of ideas and receiving their input and facilitate public consultations effectively.

6.2 Summary of Previous Stakeholder Consultations

The previous/initial consultation meeting with the stakeholders focus groups regarding metro modernization was organized by consultants (Dornier Group and Saunders Infrastructure Consultants) within the “Tbilisi Metro Project Capacity Building and Stakeholder Participation Program” (GrCF2 W1 - Tbilisi Metro Project) in February 2024. Its primary goal was to enhance public ownership by encouraging the use of public transport, increasing publicity on the improvement of public transport services (service quality and metro rehabilitation activities) and raising public awareness on issues related to metro modernization. The following entities have been presented at the meeting: Tbilisi Transport Company, Tbilisi Transport and Urban Development Agency (TUDA), Georgia Blinds Union, Movement of the Blind in Georgia “I saw Progress”, Anti-Violence Network of Georgia, NGO “Child and Mother”, other. The members of the focus group presented the needs of the specific target group that still require improvement. For example, the provision of access for baby carriages, adaptation of escalators (installation of sound signals) to the needs of the blind, clearer signage designating the seats for blind passengers, benefits for women victims of violence, etc. All opinions and recommendations expressed by the various participants of the focus groups have been documented and will be considered by the Transport and Urban Development Agency, as well as Tbilisi City Hall (the decision-making bodies) in order to better tailor the transport network to the needs of various (including vulnerable) groups.

6.3 Summary of Recent Stakeholder Consultations

The Project-specific consultation meetings with the stakeholders for the Metro Modernization Project (Procurement of the New Rolling Stock for Tbilisi Metro) have been held by TTC on 29th and 30th of August 2024. The purpose of the meetings was to inform stakeholders focus groups on the goals and objectives of the procurement of new rolling stock for Tbilisi Metro Modernization. The following entities have been presented at the meetings: Tbilisi Transport Company, Tbilisi Transport and Urban Development Company, Transport Commission of Tbilisi City Council, NGO Urban Lab, Tegeta Motors,

SMEC Gender Specialist and EHS Specialist. Some of the invited members of the focus groups who cannot attend the meeting mentioned informally that they are welcoming and supporting the replacement of old rolling stock by new, and see only benefits and positive impact of the Project.

The TTC has presented to stakeholders the information related to procurement of new rolling stock within the framework of Tbilisi Metro Modernization Project, financed by AIIB. It was mentioned that AIIB considers the critical role of stakeholder engagement throughout the various stages of project implementation to ensure enhanced service quality. Project SEP and GRM have been explained, as well as the AIIB PPM (Project-affected People's Mechanism).

Stakeholders expressed understanding of the benefits related to the purchasing and operating of new metro cars, replacing the old, depreciated rolling stock to improve safety. Concerns were raised about the company's infrastructure and staff preparedness to maintain the new vehicles. Stakeholders inquired about the anticipated procurement timeline. Additionally, interest was expressed in how the new metro cars would enhance passenger service, with particular emphasis on accessibility for disabled individuals.

In response to stakeholders' queries the TTC representatives have briefed stakeholders on the current condition of the metro infrastructure, provided information on the terms of metro car purchase and delivery. They informed stakeholders that the new metro cars will feature a three-year warranty, which will be used to train technical staff for maintaining these new vehicles. The training program involves sending several instructors to the manufacturing company for certification, upon their return, they will then train the remaining staff. To further enhance staff proficiency, the TTC emphasized the purchase of a simulator to facilitate ongoing retraining and skill development. It was further underscored that the new metro cars will significantly improve accessibility and comfort for individuals with special needs.

Recommendations provided by stakeholders have been noted and documented by the TTC. The Minutes of the Meetings (MoM) are attached as an annex to the Project SEP. The Project SEP and GRM will ensure that these inputs are carefully considered to better tailor the metro services to the needs of vulnerable groups.

TTC representatives have assured the participants that similar meetings will be held regularly, within the SEP implementation process, to foster enhanced stakeholder engagement throughout the project's implementation.

6.4 Monitoring and Reporting of SEP

The **monitoring and reporting system** has been developed as part of the SEP to ensure that stakeholder participation remains dynamic, effective, and responsive to the changing needs and expectations of the various groups involved in the project.

6.5 Grievance Redressal Mechanism

6.5.1 Potential Complaint Categories

Anyone (TTC consumers/passengers, TTC personnel/workers, other stakeholders or project-affected persons) will be able to submit a grievance to the TTC PIU if they believe a practice is having a detrimental impact on the city community, the environment, or on their personal safety or quality of life. Grievances could include:

- Dangers to health and safety or the environment.
- Worker complaints related to fair treatment, discrimination and equal opportunity

- Failure to comply with standards or legal obligations.
- Negative impacts on a person or a community (e.g. financial loss, physical harm, nuisance).
- Harassment of any nature.
- Criminal activity.
- Improper conduct or unethical behavior.
- Financial malpractice or impropriety or fraud.
- Attempts to conceal any of these.

6.5.2 Objectives of GRM

The objectives of the GRM are to:

- Establish a formal mechanism for affected people and employees to raise complaints or grievances.
- Develop an organizational framework to address and resolve the grievances of individual(s) or community(s), fairly and equitably.
- Provide enhanced level of satisfaction to the aggrieved.
- Provide easy accessibility to aggrieved/affected parties for immediate grievance redress.
- Ensure that the complainants are always treated fairly.
- Protect complainants from retaliation, grant them confidentiality and enable them to remain anonymous.

6.5.3 Submission of grievance

Grievances/complaints will go to the TTC PIU. The grievance(s) will be reviewed, and decisions made thereafter to redress the issue. Upon receipt, the grievance will be sorted and reviewed by senior management (Community Liaison Officer (CLO), Public Relations (PR) Manager or Human Resource (HR) Manager) and it will be decided that how will it be taken into further consideration. The grievance mechanism will be notified after the project approval and made public throughout the public consultation process and will be maintained during the implementation of the project. The TTC website, the TTC page at social network, and a direct, dedicated telephone line will be available at TTC to receive complaints or concerns related to the Project. The TTC will monitor these communication sources and maintain the log (register) of all grievance submissions and calls. The information of grievances received and resolved will be included in the semiannual report submitted to the AIIB.

6.5.4 Grievance Resolution Process

In case the grievance is not connected to the project activity or in case the TTC finds that all work is consistent with applicable Georgian and international standards, the grievance will not be further processed. When this occurs, this will be explained in writing to the person who submitted the grievance. In all other cases, the TTC, (in consultation with other authorities if/as needed), will investigate whether there has been a failure to work to standards and if so, to identify measures to prevent the incident from occurring again. In general, grievances will be resolved as described below.

Step 1: Receive Complaint: Once the TTC Contact Person (CLO, PR Manager or HR Manager) receives a letter, the filled grievance form, the social network post, or is otherwise notified of a potential problem via the phone call, TTC assigns Responsible Manager/Officer for resolving the grievance, including notifying other responsible authorities of the issue.

Step 2: Acknowledgement: The Contact Person (CLO, PR Manager or HR Manager) will acknowledge receipt of a grievance by letter within 7 working days of having received the grievance. The

acknowledgement will specify a contact person, their reference indicator, and an anticipated target date for resolution.

Step 3: Investigation: The TTC Contact Person (CLO, PR Manager or HR Manager) will work to understand the cause of every grievance. They may need to contact the claimant during this time. During this phase, the TTC will determine whether the grievance is related to the company operations, and if so whether the problem was caused by a failure to meet Georgian or international standards. If the problem was indeed caused by a failure to meet standards, the TTC will determine if this was a one-time occurrence or if there is an underlying problem with project activities. The TTC Responsible Manager/Officer will coordinate modifications to project activities as necessary to meet standards and avoid future problems, and for ensuring that project management and workers are properly counseled and trained to avoid future recurrences of the problem. According to Administrative Code of Georgia the target timeline for grievances investigation is 20 working days.

Step 4: Resolution: Once TTC's Responsible Manager/Officer, (with other TTC specialists if/as needed), have investigated a grievance and determined the proper course of action, the TTC Contact Person (CLO, PR Manager or HR Manager) will write to the claimant and disclose the results of the investigation and of the proposed course of action, if any. If the person who submitted the grievance considers the issue to be satisfactorily resolved, they will be asked to sign a Statement of Satisfaction. If the grievance remains unresolved it will be reassessed and there will be further dialogue with the claimant to determine if there are any further steps which may be taken.

Step 5: Follow Up: The TTC may contact the claimant at a later stage to ensure that the activities continue to pose no further problems. If there is a remaining problem, the issue will be treated as a new grievance and re-enter the process.

6.5.5 Confidentiality and Anonymity

A person submitting a grievance may wish to raise a concern in confidence. If the claimant asks the TTC to protect his or her identity, it will not be disclosed without consent. Details of submissions and allegations will remain secure within the team responsible for investigating the concerns. However, the situation may arise where it will not be possible to resolve the matter without revealing the claimant's identity (for instance where it is required to give evidence in court). The investigative team will discuss with the claimant how best to proceed.

In case the claimant does not disclose his identity to the TTC, it may make it more difficult to investigate the matter, to protect claimant's position, or to give feedback. TTC will consider anonymous reports, but the anonymous grievance will need to include sufficient facts and data to enable the investigative team to look into the matter without any further assistance. The grievance redress form is presented in Annex 1.

6.5.6 AIIB Policy on Project-affected People's Mechanism (PPM)

People who believe they have been or are likely to be adversely affected by a failure of the Bank to implement the ESP may submit complaints to the Bank's PPM in accordance with the "Policy on the PPM", when their Project-related concerns cannot be addressed satisfactorily through Project-level GRMs or the AIIB's management processes. Related information can be obtained by visiting the following links: <https://www.aiib.org/en/policies-strategies/operational-policies/policy-on-the-project-affected-mechanism.html>.

6.5.7 Disclosure of GRM

Pursuant to the provisions of Section 20.2 of AIIB ESS1, the GRM shall be disclosed at TTC website as well as in the depots and on each station. The final processes and procedures for the GRM will be translated into local language i.e., Georgian and disseminated at all project locations. Banners and posters will be displayed, as appropriate. Disclosure of GRM will also remain an agenda item for project related stakeholder consultation meetings.

Information on the availability of the PPM should be provided in an accessible and understandable manner in local (Georgian) language, including on the Client's project related website.

7. Environmental and Social Management

7.1 Implementation Arrangement

The institutional arrangements for Project ES management include the following: the TTC HSE Environmental Manager (Project ES Focal Point) will be member of Project PIU, The Project Supervision Consultant (SC) will have ES Supervisors within its staff (reporting to PIU and TTC HSE Department), the existing TTC HSE Department and its HSE Inspectors will be responsible to oversee/monitor the implementation of the mitigation measures together with SC ES Supervisors. Figure 1 (below) indicates TTC structure during project preparation (agreed with AIIB) and Figure 2 indicates implementation structure for the ESHS component of the Project:

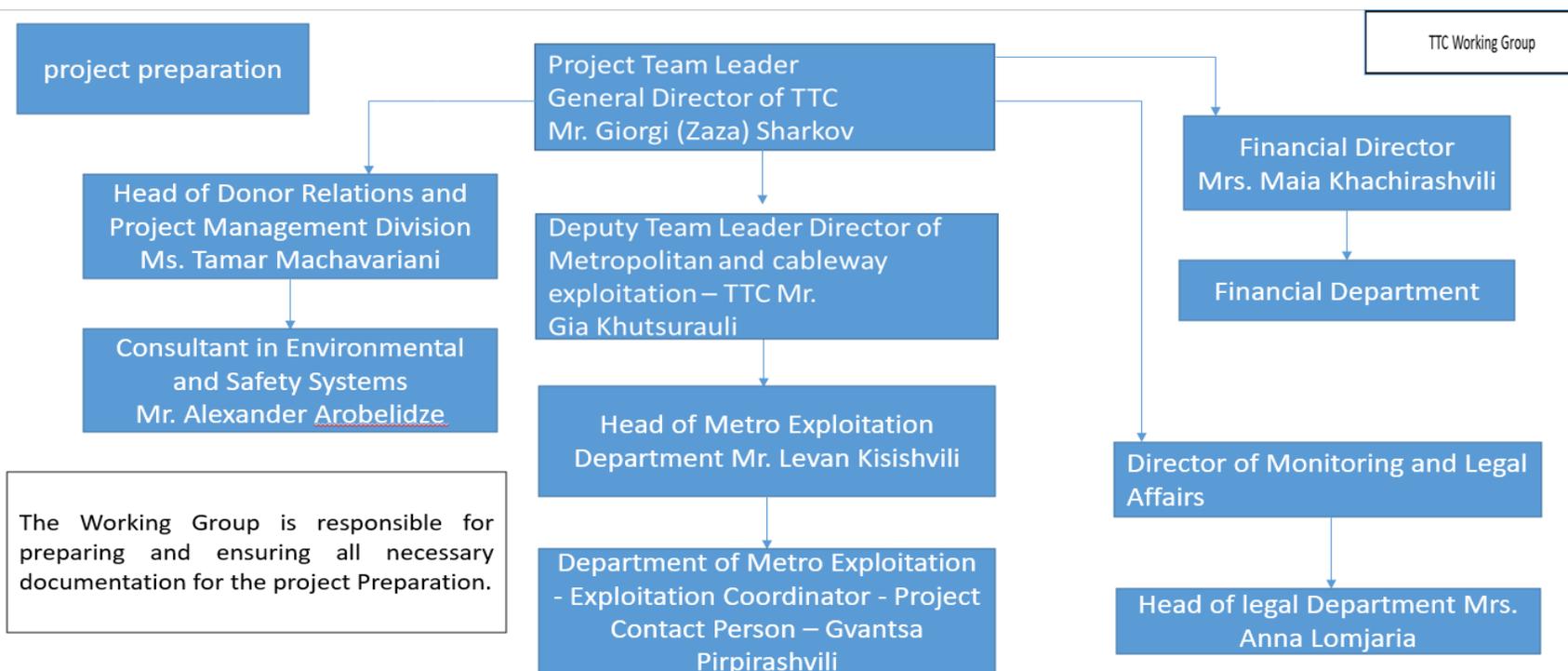


Figure 1 TTC Structure during Project Preparation

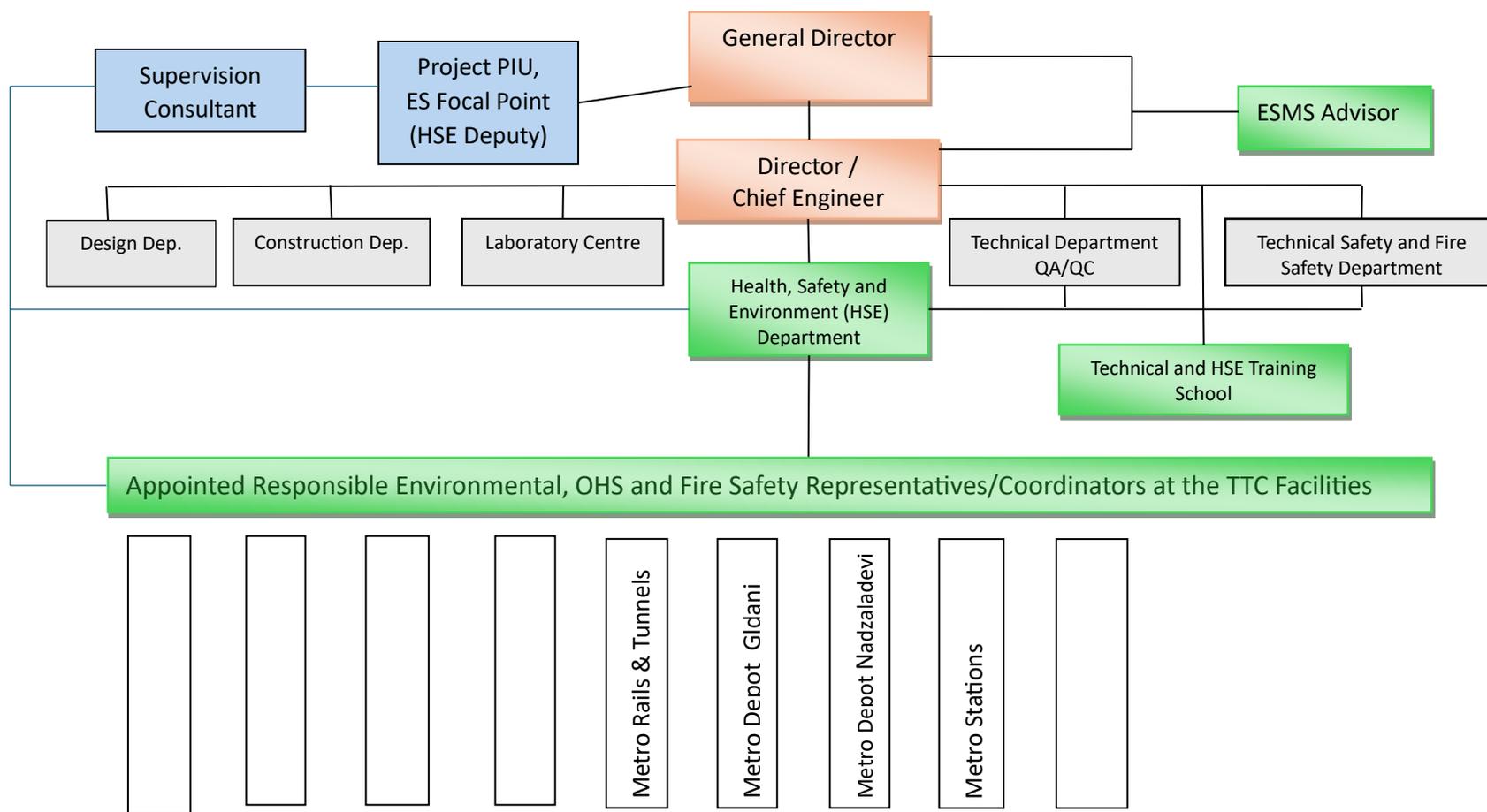


Figure 2 PIU Structure (ESHS Component) during Implementation of Project
 If decommissioning component is contracted out to authorized Contractor, the Project SC ES Supervisors and TTC HSE Department will oversee/monitor the HSE performance of the Contractor to be in compliance with the Project ESHS requirements reflected in his contract with TTC.

7.2 Roles and Responsibilities

7.2.1 PIU

In order to perform ESHS functions, the Project Implementation Unit for Metro Modernization Project includes the part of TTC EHS Department responsible for EHS control over the metro O&M component. The number of EHS officers/inspectors will inspect the metro operations, maintenance and the decommissioning (even if contracted out) processes regularly (on daily/weekly basis), carryout monitoring by using environmental and H&S checklists, issuing corrective/preventive actions requests for noncompliances, and preparing monthly EHS reports based on records of weekly inspections. They will also undertake the internal semi-annual EHS Audit of all metro operations, maintenance and decommissioning and prepare corresponding semi-annual EHS Audit Report. The Deputy Head of TTC EHS Department (PIU Focal Point for the Project) will review the EHS reports received from Supervision Consultants and prepare the Quarterly EHS Report to TTC Management, City Council and semiannual reports to the Lender (AIIB).

7.2.2 Supervision Consultants

The supervision consultants engaged by the TTC will appoint competent environmental, social health and safety specialists during the project implementation. The ESHS staff of the Supervision Consultant will oversee the metro operations, maintenance and decommissioning activities on daily/weekly basis and submit monthly EHS reports to TTC PIU EHS Focal Point (Deputy Head of TTC EHS Department). The ESHS staff of the SC will review ESMP every six months and update the ESMP if required and will provide input and advice to TTC PIU on activity specific work plans relating to ESMP. The SC EHS staff will be constantly in contact with the TTC EHS Department to inform promptly on any noncompliances requiring immediate corrective/preventive actions.

7.3 Environmental and Social Management Plan

The ESMP is prepared in a table format, outlining identified impacts, proposed mitigation/management measures, responsibilities, and timelines, monitoring actions per each group of impacts, including frequency of monitoring, responsible party, and performance (compliance) indicators.

Table 5: Environmental and Social Management Plan

Impact	Mitigation / Management	Responsible Party	Timeline	Monitoring	Frequency	Responsible Party	Compliance Indicator
1. Manufacturing of New Rolling Stock							
Manufacturing Emissions	Implementing cleaner production techniques, using low-emission technologies	Manufacturing Company	Ongoing during production	Regular monitoring of compliance with contract obligations	Quarterly	Supervision Consultant, TTC PIU HSE Department	Compliance with Contract Specifications

Impact	Mitigation / Management	Responsible Party	Timeline	Monitoring	Frequency	Responsible Party	Compliance Indicator
Resource Consumption	Use recycled materials, optimize material use	Manufacturing Company	Ongoing during production	Monitoring of compliance with contract obligations	Quarterly	Supervision Consultant, TTC PIU HSE Department	Compliance with Contract Specifications
Transport Emissions and transport of rolling stock	<ul style="list-style-type: none"> • Use low-emission vehicles, optimize transport routes • The manufacturer will submit a transportation management plan to TTC PIU before transportation activity. 	Manufacturer and Logistics Company	During transportation	Monitoring of compliance with contract obligations. Measures suggested in transportation management plan	Each transport phase	Supervision Consultant, TTC PIU HSE Department	<ul style="list-style-type: none"> • Compliance with Contract Specifications • Submission of transportation management plan
2. Operation of New Rolling Stock							
Energy Consumption	Use renewable energy sources, implement energy-efficient technologies	Metro Operator (TTC PIU)	Ongoing during operation	Track energy consumption, source audit of energy providers	Quarterly	Supervision Consultant, TTC HSE Department	Increase in renewable energy usage
Noise Pollution	<ul style="list-style-type: none"> ○ Noise and vibration mitigation measures are integrated with the project design to minimize noise and vibrations due to Rail & wheel interaction, pantograph, aerodynamic noise, etc. ○ Noise barriers shall be installed at the sensitive receptors. 	Metro Operator (TTC PIU)	Ongoing during operation	Noise level monitoring, compliance with noise standards	Quarterly	Supervision Consultant, TTC Laboratory, TTC PIU HSE Department	Noise levels within permissible limits

Impact	Mitigation / Management	Responsible Party	Timeline	Monitoring	Frequency	Responsible Party	Compliance Indicator
	<ul style="list-style-type: none"> ○ Sound-dampening materials should be used. ○ Proper maintenance shall be carried out for rolling stock to minimize the noise and vibration generation. ○ Employees working in noisy environment will use earmuffs/ear plugs to avoid any adverse impact of noise. ○ It will be ensured that operational noise levels not exceed the metro specific international and local noise levels. 						
Air Quality	<ul style="list-style-type: none"> ● Replace older rolling stock with low-emission models. ● Carryout regular air quality monitoring 	Metro Operator (TTC PIU)	Ongoing during operation	Monitor air quality indicators around operation areas	Quarterly	TTC Laboratory	Improvement in air quality indices
Vibration	Regularly maintain the track, including grinding and smoothing the rails, to minimize irregularities. Implement speed restrictions in areas particularly sensitive to vibrations	Metro Operator (TTC PIU)	Ongoing during operation	Use real-time monitoring systems (sensors) for detecting and addressing excessive noise and vibrations	Monthly	TTC Laboratory Supervision Consultant, TTC PIU HSE Department	Vibration levels remain within acceptable limits. No complaints from residential and other close by areas.

Impact	Mitigation / Management	Responsible Party	Timeline	Monitoring	Frequency	Responsible Party	Compliance Indicator
Waste Generation	<ul style="list-style-type: none"> ○ Waste to be generated from stations shall be segregated at source and shall be disposed of as per the Waste Management plan and applicable law. 	Metro Operator (TTC PIU)	Ongoing during operation	Visual Monitoring	Bi-weekly	Supervision Consultant, TTC PIU HSE Department	No waste at the stations and in the depots
Improved Service	Increase frequency and reliability of metro services	Metro Operator (TTC PIU)	Ongoing during operation	Passenger satisfaction surveys, service reliability reports	Monthly	Supervision Consultant, TTC PIU HSE team with support of Operations Manager	Higher passenger satisfaction scores
Accessibility	<ul style="list-style-type: none"> ● Retrofit new rolling stock with accessible features ● New rolling stock should be compliant with the specifications of tender documents 	Metro Operator (TTC PIU)	Prior to starting operation	Monitor accessibility features, feedback from disabled users	Quarterly	Supervision Consultant, TTC PIU HSE team with support of Accessibility Officer	Increase in accessibility compliance
Safety	<ul style="list-style-type: none"> ○ The current operational safety systems and procedures deployed by TTC will be reviewed and verified by the technical team of the supervision consultants before the trial operation of the new rolling stock. ○ Regular inspection and maintenance of the rail lines and facilities will be carried out to ensure track stability and 	Metro Operator (TTC PIU)	Ongoing during operation	Safety audits, incident reports	Monthly	Supervision Consultant, TTC PIU HSE team	Reduction in accidents and incidents

Impact	Mitigation / Management	Responsible Party	Timeline	Monitoring	Frequency	Responsible Party	Compliance Indicator
	<p>integrity in accordance with national and international track safety standards.</p> <ul style="list-style-type: none"> ○ Trainings will be provided to the staff involved in the operation of new metro cars regarding advanced safety features. 						
Security	Ensure sufficient number of security cameras within new metro cars and at the stations	Metro Operator (TTC PIU)	Prior to starting operation	Security audits	Monthly	Supervision Consultant, TTC PIU HSE Department	Reduction in accidents and incidents
Gender Issues	<ul style="list-style-type: none"> ○ TTC has implemented a robust policy on sexual harassment to tackle such issues both in the workplace and within the metro system. ○ TTC will ensure sensitization of staff regarding gender-based violence (GBV) and harassment. ○ The Project GRM will be responsive to the complaints related to gender issues from both passengers and staff. All such complaints will be recorded. 	Metro Operator (TTC PIU)	Ongoing during operation	Monitor Complaints	Monthly	Supervision Consultant, TTC PIU HSE Department	Zero cases/records on harassment and GBV
3. Maintenance of New Rolling Stock							

Impact	Mitigation / Management	Responsible Party	Timeline	Monitoring	Frequency	Responsible Party	Compliance Indicator
Waste Generation	Compliance with TTC ESMS Waste Management Plan, and measures provided in 5.2.3, 5.2.4 and 5.3	Maintenance Team of TTC	Ongoing during maintenance	Monitor compliance with WMP	Monthly	Supervision Consultant, TTC HSE Department	Reduction in waste generation
Resource Use	Optimize resource usage, use sustainable materials	Maintenance Team of TTC	Ongoing during maintenance	Monitor resource consumption, sustainability audits	Quarterly	Supervision Consultant, TTC HSE Department	Increased efficiency in resource use
Pollution Prevention	Compliance with TTC ESMS Pollution Prevention and Control Plan and measures provided in 5.2.3,5.2.4, and 5.4	Maintenance Team of TTC	Ongoing during maintenance	Monitor control measures	Monthly	Supervision Consultant, TTC HSE Department	Reduction in pollution incidents
Employment	Provide training and employment opportunities	HR Department of TTC	Ongoing during maintenance	Track employment rates, training program effectiveness	Quarterly	HR Manager	Increase in employment and skill levels
Health and Safety	Compliance with TTC ESMS Occupational H&S Plan and measures provided in 5.2.3, 5.2.4.and 5.5 Semiannual environment, health and safety audit will be conducted	Maintenance Team of TTC	Ongoing during maintenance	Safety audits, health, and safety incident reports	Monthly	Supervision Consultant, TTC HSE Department	Reduction in workplace incidents
4. Decommissioning of Old Rolling Stock							
Waste Management	Compliance with TTC Waste Management Plan, updated according to Section 5.2.4 and 5.3 of this ESMP. The TTC will prepare decommissioning phase	TTC Decommissioning Team or authorized Contractor	During decommissioning	Monitor waste handling practices, ensure compliance with disposal regulations	Each decommissioning phase	Supervision Consultant, TTC PIU HSE Department	Compliance with waste disposal plan and standards

Impact	Mitigation / Management	Responsible Party	Timeline	Monitoring	Frequency	Responsible Party	Compliance Indicator
	ESMP (covering waste management including hazardous waste and asbestos management, pollution prevention, health and safety issues etc.) before the start of decommissioning phase and will get approval from the Bank						
Recycling	Maximize recycling of materials, engage recycling companies	TTC Decommissioning Team or authorized Contractor	During decommissioning	Track recycling rates, audit recycling processes	Each decommissioning phase	Supervision Consultant, TTC PIU HSE team	Increase in recycling rates
Pollution Prevention	Compliance with, TTC ESMS Pollution Prevention and Control Plan and measures provided in section 5.2.4 and 5.4.	Decommissioning Team or authorized Contractor	During decommissioning	Monitor control measures	Monthly	Supervision Consultant, TTC PIU HSE Department	Reduction in pollution incidents
Health and Safety	Compliance with TTC ESMS Occupational H&S Plan and measures provided in sections 5.2.4 and 5.5 of this ESMP, Semiannual EHS audits will be conducted	TTC Decommissioning Team or authorized Contractor	During decommissioning	Safety audits, health and safety incident reports	Monthly	Supervision Consultant, TTC PIU HSE Department	Reduction in workplace incidents
Community Impact	Engage with communities, mitigate disruption	TTC Community Liaison Team or authorized Contractor	During decommissioning	Monitor community feedback, address concerns promptly	Each decommissioning phase	Supervision Consultant, TTC PIU HSE Department with support of Community Liaison Officer	Positive community feedback

8. Monitoring and Reporting

8.1 Monitoring Plan

The TTC has developed the monitoring and reporting framework to track the implementation and effectiveness of the mitigation measures per each impact, including key performance indicators (KPIs) and reporting timelines.

Ongoing monitoring and evaluation are essential to ensure the effectiveness of mitigation measures and to adapt strategies as necessary. This includes:

- Environmental Monitoring: conduct compliance monitoring (compliance with ESMP, waste management plan, pollution prevention and control plan) and effects monitoring (noise, vibration levels, wastewater in depots)
- Social Monitoring: Conduct periodic assessments to monitor social impacts (including compliance with OHS plan), and address issues promptly.
- Stakeholder Engagement: Maintain open communication with stakeholders, including the community and workers.

In response to environmental and social impacts identified and the ESMP developed – it becomes an integral part of TTC’s Environmental and Social Management System (ESMS). The monitoring and reporting procedure is needed to verify the effectiveness of the proposed mitigation measures in reducing impacts and also to allow mitigation measures to be refined or developed as needed to address actual impacts and/or future effects.

More specifically, the objectives of a monitoring program are:

- To record project impacts during new rolling stock operation and assess the changes in environmental conditions;
- To monitor the implementation and evaluate the effectiveness of the mitigation measures;
- To indicate potential problems and identify any shortcomings in order to allow prompt implementation of corrective actions, refinement and/or enhancement of mitigation measures;
- To meet legal requirements, TTC corporate commitments and city community obligations;
- To allow development of mitigation measures to deal with unforeseen issues or changes in operations;
- To allow TTC and AIIB (as a Lender) to verify that the requirements of loan agreements are being met.

The Monitoring Program is integrated into ESMP and describes the parameters to be monitored, the activities to be executed, locations, time and frequency of monitoring activities, and the collection, analysis, and reporting of monitoring data. Monitoring includes compliance monitoring, effects and mitigation monitoring. The program aims to monitor conditions at the sources of potential disturbances or at the locations of impact receptors. Effects monitoring is particularly relevant regarding social impacts, as the cause of impacts is often not any single impact, but rather an accumulation of diffuse impacts.

The proposed monitoring measures, methods, period/frequency, responsible party and KPIs are reflected/incorporated within the ESMP table presented in Section 7 of this report. The monitoring will comprise supervision and inspections to check whether the operator, maintenance team or decommissioning contractor are meeting the provisions of the ESMP.

Environmental supervision and monitoring, as part of the TTC’s Environmental and Social Management System (ESMS) are conducted throughout all phases of operations, with the aim of:

- (i) Ensuring that action necessary to provide the required mitigation is taken;
- (ii) Ensuring that the mitigation protects the environment as intended; and

(iii) Determining the actual environmental and social impacts that occur once mitigation has been applied, to establish whether there are any residual or unexpected impacts that require further action.

8.2 Auditing

Environmental and social audits will be undertaken throughout the implementation period to ensure that the Project environmental, health and safety and social requirements and the ESMP are implemented appropriately. The auditing process should be designed to identify any non-conformances, providing an opportunity to apply corrective and / or preventative action where appropriate. The audit will be internal and will be carried out by the TTC PIU and supervision consultants on a semiannual basis. These audits would be used to re-examine the continued appropriateness of the ESMP and to provide advice on any updates required. Attention will be given to lessons learnt in the light of experience. Consideration will be given to the monitoring programs in place to determine whether their purpose has been served.

8.3 Reporting

The TTC PIU through its qualified environmental staff, is responsible for all monitoring activities, and that the results would be reported to TTC Management, to Tbilisi Municipality and to other stakeholders as appropriate. In addition, the AIIB (as Lender) will receive reports on semi-annual basis from TTC.

The details of reports to be prepared for the project is presented below. All reports will be prepared both in English and Georgian.

- **Incident/accident reporting:** All TTC personnel are responsible for reporting all HSE incidents and near misses. TTC PIU will notify and report AIIB, no later than 48 hours after learning of any incident or accident related to the Project which has, or is likely to have, a significant adverse effect on the environment, affected communities, passengers/ public or workers, including, inter alia, cases of sexual exploitation and abuse (SEA), sexual harassment (SH), and accidents that result in death, serious or multiple injury. These reports will provide sufficient detail regarding the scope, severity, and possible causes of the incident or accident, indicating immediate measures taken or that are planned to be taken to address it. The “Immediate Incident Notification Form” is presented in the annexure 2 of this document. Detailed root cause analysis report will be submitted after the conclusion of the incident investigation.
- **Inspections and Observations:** daily/weekly inspections and observations made by the TTC PIU ESHS Inspectors. These reports will be for internal use of TTC.
- **Quarterly Environmental and Social Report:** The quarterly reports will involve a full review of the ESMP status/progress. The ES team of supervision consultants will prepare quarterly ES implementation reports and submit to TTC PIU for review and approval.
- **Semi-annual Monitoring Report:** Semiannual ES monitoring reports will be prepared by TTC PIU and will be submitted to AIIB (Lender) and Tbilisi Municipality. The report will provide information on ES audit findings and proposed corrective actions (if any) as well.: The template of the report is presented in Annex 3.

9. Capacity Building

The training needs for TTC personnel on environmental, social, health and safety management practices have been assessed within the TTC Corporate Development Program and following the outcomes, the Capacity Building and Training Procedure has been included into TTC ESMS. This procedure will be utilized for the Project and considers the following:

TTC will train staff appropriately and periodically, utilizing progressive training techniques. This procedure is aimed to implement policy for managing ESHS awareness and competency training for TTC personnel, including staff involved in operations and maintenance of the new rolling stock. The procedure is established for:

- Identifying personnel that require ESHS awareness and competency training
- Developing and updating awareness and competency training programs and instructions
- Conducting ESHS awareness and competency training for TTC management

Awareness Training. Activity leadership will ensure all personnel are aware of their ESHS stewardship responsibilities and key components of the ESMS and ESMP, such as the ES Policy, ES Management Plans and Procedures, and potential consequences if plans/procedures are not followed.

Competency Training. All personnel that have positions or duties with potential to affect the environment, health or safety are required to have competency training to meet the requirements of their primary job functions and any additional duties they are assigned. This procedure applies to all activities and personnel who work for, or on behalf, of TTC.

Roles and Responsibilities. The TTC PIU EHS Department with the help of supervision consultants will provide overall guidance and direction for conducting of ESHS management awareness and competency training. The TTC Senior EHS Specialists, ESHS Inspectors, Supervisors and Contractors' HSE Managers will ensure all personnel within their activities to receive ESHS awareness and competency training on a monthly/quarterly basis. They will identify all personnel within their activity that by profile/type of their assignments, primary job functions, and/or additional duties require ESHS awareness and competency training, skills, or certification.

The Training Plan Worksheet identifies the type of training that managers and workers need in order to effectively implement ESMPs and the ESMS procedures. It should also be distinguished between those who only need basic ESMS training and those who need more advanced ESHS training to carry out their responsibilities. The specific training modules should be selected for each of the target groups based on the relevant risks and potential improvement opportunities per each specific project.

Toolbox talks will be another method of raising awareness and educating personnel on issues related to all aspects of rolling stock operation and maintenance and repair activities in an operational rail environment, including environmental issues. The toolbox talks are used to ensure environmental awareness continues throughout the operational life of the network.

For the Metro Modernization Project - the following training plan (Table 6) is proposed and refresher trainings will be provided throughout the project implementation on regular basis.

Table 6: Project Training Plan Worksheet

No.	Training Topic	Trainer	Target Group	Timeline
1	Introduction to AIIB ESF safeguard standards	ESMS Advisor,	TTC Top Management, PIU, Metro Department, HSE Department	Q4 2024
2	TTC ESMS and the ESMP for Metro Modernization Project	ESMS Advisor	TTC Top Management, PIU, Metro Department, HSE Department	Q4 2024
3	Project ESMP Implementation	ESMS Advisor, Project ES Focal Point	PIU, Metro Department, HSE Department	Q1 2025
4	OHS Plan for the Project	Project ES Focal Point, Head of HSE Department	PIU, Metro Department, HSE Department	Q1 2025
5	Incident/Accident Investigation & Reporting, Root cause analysis	Project ES Focal Point, Head of HSE Department	PIU, Metro Department, HSE Department	Q1 2025
6	Emergency Preparedness and Response	Project ES Focal Point, Head of HSE Department, Supervision Consultant	PIU,, Metro Department, HSE Department	Q1 2025
7	Waste Management	Project ES Focal Point, Supervision Consultant	PIU, Metro Department, HSE Department	Q2 2025
8	Pollution Prevention and Control	Project ES Focal Point, Supervision Consultant	PIU, Metro Department, HSE Department	Q2 2025
9	Stakeholders Engagement Plan for the Project	ESMS Advisor TTC PR Manager Supervision Consultant	PIU, CLO, Metro Department,	Q2 2025
10	GRM for Workers	ESMS Advisor TTC HR Manager Supervision Consultant	PIU staff, CLO, Metro Department,	Q2 2025
11	Gender Issues (including GBV and Harassment)	ESMS Advisor TTC HR Manager Supervision Consultant	PIU and TTC staff, CLO, Metro Department,	Q2 2025
12	-Induction for new employees, workers and drivers -Toolbox talks, equipment training and instructions -Daily lectures on safety and environment	Project ES Focal Point, Head of HSE Department Supervision Consultant	PIU, Metro Department, HSE Department	Q3 2025

10. Emergency Preparedness and Response.

The Emergency Preparedness and Response Plan (EPRP) defines responsibilities and actions to be taken by Company's (including its operators' and contractors') personnel and its ESHS Specialists, Inspectors and Supervisors, that should be followed in the event of various possible emergencies, which may endanger life, damage property, or harm the environment. The purpose of the EPRP is to help prevent environmental and social incidents related to metro cars rolling stock operations, to establish communication protocols to notify stakeholders and authorities in case of an emergency, to assure preparedness in the event incidents occur, and to provide a systematic and orderly response to emergencies.

This EPRP will need to be tailored/updated and supported by specific details per each site/facility (metro stations, depots), including the schematic plan indicating:

- Emergency gathering points / muster points
- Fire extinguisher locations
- Medical stations; and
- Evacuation routes

Regular and frequent emergency exercises and drills shall be performed to ensure adequate emergency response capabilities are always in place. Periodic review and continuous improvement of the corporate and project/site/facility specific EPRPs will be an integral part of this process.

This plan includes provision for emergencies involving, but not limited to:

- Medical Emergency (incidents/accidents)
- Fire
- Security issues
- Hazardous Material (oil/chemical/other) spill or release
- Flooding in tunnels or at stations
- Earthquakes
- Electric Shocks/Electrocution

The Project/Site/Facility Head (or Manager) and its HSE Manager (or representatives on site) are responsible for ensuring that employees and contractors are familiar with this procedure and implemented accordingly.

The HSE Manager is responsible for maintaining an up-to-date list of members of the Emergency Committee, as well as communicating this plan within the Emergency Committee members.

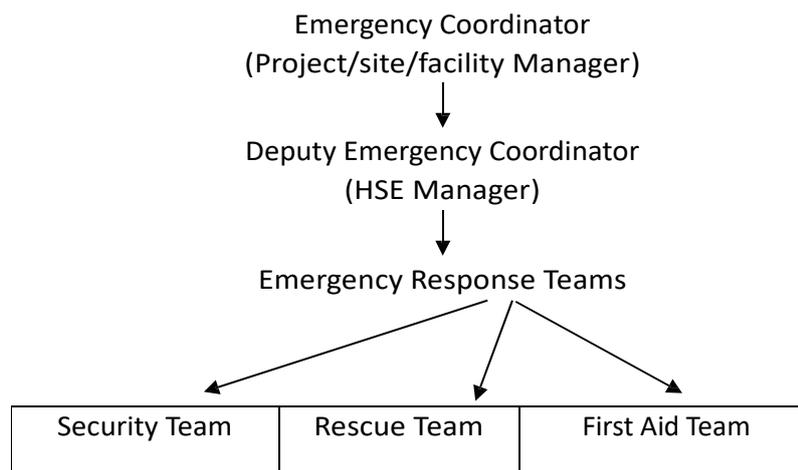
The Emergency Committee key roles are to ensure that in case of an emergency, all individuals know what part they must play to prevent, control and take corrective action. The Emergency Committee will be made up of the following persons as per the Table 7 below:

Table 7: Composition of the Emergency Committee

Team Member	Appointment
Emergency Coordinator	The Site/Facility Manager or his/ her delegate will be appointed as Emergency Coordinator.
Deputy Emergency Coordinator	HSE Manager will be appointed as Deputy Emergency Coordinator.
Fire Coordinator	A Site Supervisor will be trained and appointed as Fire Coordinator.

First Aid Coordinator	A person with a valid first aid certificate will be appointed as a First Aid Coordinator.
First Aid Team	First Aid teams will be trained and appointed as members of the First Aid Team and will assist the First Aid Coordinator in the event of an emergency.
Communications Coordinator	The HR or PR Manager will be appointed and trained as Communications Coordinator.
Transport Coordinator	The Operations Manager will be appointed as the Transport Coordinator.
Medical Response Coordinator	The onsite Doctor will be appointed as the Medical Response Coordinator.
Security Services	Security Personnel will be appointed to coordinate all security aspects on the site. They will assist with security procedures during an emergency.

After an Emergency has occurred or any emergency response exercise/drill, a debriefing should be held and documented in a report. The report shall identify all deficiencies in the emergency response processes and formulate recommendations on how to avoid occurrences of incidents.



Before any emergency situation occurs, HSE Manager holds a series of workshops at each stage of operations to determine the emergency response plans required at the various stages to assist. The focus of these workshops will be the activities highlighted by the previous risk assessment workshops. If any emergency situation occurs, it is coordinated by Project/Site/Facility Manager. All emergency teams will be under his/her direction. HSE Manager will advise to Emergency Coordinator (as deputy) and lead the operation of the response on site.

Project/site/facility manager, together with HSE Manager are responsible to supply necessary resources for all Emergency Preparedness and Response actions.

Detailed responsibilities of security team, rescue team, first aid team, will be defined in site/facility-specific Emergency Procedure.

The below Table 8 acts as a guide as to the details required for each of the key contact persons of the Emergency Response Teams.

Table 8: Contact Numbers for Key Contact Persons of Emergency Response Teams (Sample)

Designation	Appointed Person's Name	Contact Number
Emergency Coordinator		
Deputy Emergency Coordinator		
Fire Coordinator		
Security Coordinator		
Communications Coordinator		
Transport Coordinator		
Environmental Team		
Community Relations Team		
Key Community Members		

The EPRP will meet the following objectives:

- Provide a means of notifying employees, customers/visitors, and local authorities on an emergency.
- Provide for a safe and orderly method of evacuation of employees and customers/visitors from TTC premises/facilities.
- Account for all employees, customers/visitors who occupies TTC premises at time of evacuation, should one occur.
- Provide emergency first aid treatment or summon emergency medical assistances for injured individuals.
- Provide training and needed information to those employees responsible for taking actions in the event of an emergency.

The common measures to rescue people and neutralize emergency are as follows:

- Calling the emergency and life-saving service - **112**;
- Calling the fire protection service - **112**;
- Calling the ambulance service - **112**;
- Evacuation of passengers/customers (from train, from tunnel, from station)
- Evacuation of employees (from depot, train, tunnel, station)
- Application of the firefighting primary means (fire extinguishers, sand);
- Premedical first aid;
- Notifying officials pursuant to a designated list;
- Organizing transport for employees' evacuation and bringing repair crews, necessary materials and equipment to the emergency (fire) location

General emergency preparedness requirements:

- Emergency procedures will form part of the induction training so that all concerned are clear as to the action required of them in an emergency.
- All personnel are notified of their duties and role in any given (foreseeable) emergency situation.
- Personnel critical to the effective execution of the emergency response is suitably trained and verified as competent.
- Managers with responsibility for command and control of an emergency response will be fully competent in the execution of their duties.
- TTC ensures that adequate resources are made available to allow effective and timely response in

the event of an emergency.

- Post exercise debriefs and lessons learned are used as a means to continually improve response efficiency and effectiveness.
- The Emergency Response Plan reflects regulatory requirements and describes interfaces with external organizations responsible for the health and safety of the neighboring areas.
- The plan is clearly documented and addresses possible or anticipated situations with appropriate actions to be taken. These plans will be periodically tested. This testing will include as a minimum:
 - Testing alarms.
 - Emergency exercises.
 - Emergency drills.
 - Reporting and Notification.
 - Communication.

Communications:

The communication for 24-hour emergency services is **112** on whole territory of Georgia.

Notifications:

Emergency Coordinator (Site/Facility Manager) or Deputy Emergency Coordinator (Site/Facility HSE Manager or H&S Representative) to notify TTC Top Management (TTC Operations Manager and TTC H&S Manager), and all members of the site/facility Emergency Management Team.

The Emergency Contact Numbers are maintained in all TTC sites, facilities, operation security buildings, and vehicles etc. TTC provide and prominently display at operations office and worksite a listing of key personnel, including persons responsible for the Emergency Response Team, complete with contact details and telephone numbers. All details posted on website.

A list of approved local hospital medical facilities is also posted for if the injured person requires off-site medical attention.

Evacuation:

Emergency evacuation plan and emergency telephone numbers will be posted on the walls at exit points showing emergency escape routes. Muster points shall be appointed and marked communicated to all site personnel prior to work commencement.

Table 9: EPRP Training Matrix

Trainee	Training content	Training form	Training frequency		Training record
			Initial training	Refresher training	
All employees, including contractors', subcontractors' and suppliers' workers	The EPRP; Muster points; Alarm and alerting systems; Reporting emergencies; Types of potential emergencies and actions required for them; Emergency management.	In-house training	Prior to working at the Projects	Annual during operation	Training materials; and List of participants (Including the participants' signatures).

Records

The control of documents and records related to emergency management and EPRP shall be conducted in accordance with the TTC document control procedure. All emergency situations, incidents and non-conformances relevant to the Project will be recorded, root causes are identified, documented and corrective actions are tracked to closure. All injuries and illnesses will be classified according to the Occupational Health & Safety guidelines.

TTC will provide duly authorized interested parties with information relating to emergency situations, accidents, incidents, injuries and near miss incidents on a monthly basis. All documents and records are required to be filed for at least five years or as per regulatory requirements, whichever is more stringent, and kept in safe storage accessible only to authorized personnel. Records shall be made available for inspection and audit by the TTC, its Lender, or their agents upon request.

Reporting:

The internal reporting during operation shall include, but not limited to:

- Quarterly emergencies and incident report of operator and decommissioning contractor performance;

Operator and decommissioning contractor shall be responsible for implementation of corrective actions for issues identified during the audits and assessments. Report on Corrective Actions Implementation Status shall be prepared and submitted to TTC Management.

TTC HSE Department shall be responsible for preparing and submitting the reports to the Ministry of IDPs, Health and Social Affairs of Georgia and the Lender (AIIB):

- Emergency situations and accident/incident statistics will be presented in the semi-annual reports submitted to the AIIB.;

11. ESMP Implementation Budget

The Table 10 below presents the annual ESMP budget for the Project implementation phase. The budget includes wages and expenses for supervision and inspections (especially over the contractors for decommissioning of old, and over the maintenance of the new rolling stock) by the HSE Department, for training by the Training Center, for monitoring by the Laboratory, for SEP implementation, etc. The ESMP annual estimated budget is considered as part of the PIU budget, allocated/incorporated within TTC annual budget for the duration of the project.

Table 10: Annual ESMP Budget for Project Implementation Phase

Sr. NO.	Cost Item	Estimated Cost (USD)	Remarks
1	Mitigation Measures: implementation of ESMP	\$105 000	Includes wages and expenses for supervision, inspections and auditing of Project-related activities, within the annual budget for TTC EHS Department
2	Implementation of Training Plan	\$10 000	Includes wages and expenses allocated within the annual budget for TTC Training Center and EHS Trainers
3	Monitoring of Noise and Vibration	\$ 10 000	Includes wages and expenses allocated within the annual budget for TTC Laboratory
4	Implementation of SEP	\$40 000	Includes wages and expenses allocated within the annual budget for HR, PR Managers and CLO
5	Preparation of Decommissioning Phase ESMP	\$5,000	Includes wages allocated within the annual budget of ESMS Advisor.
6	Operational Cost	\$50,000	Includes printing of material, drills and transportation expenses.
Total Annual Budget		\$220,000	

Annexure 1 Grievance Redressal Form

Reference No:

<p>Full Name</p> <p>Note: you can remain anonymous if you prefer or request not to disclose your identity to the third parties without your consent</p>	<p>First name _____</p> <p>Last name _____</p> <p><input type="checkbox"/> I wish to raise my grievance anonymously</p> <p><input type="checkbox"/> I request not to disclose my identity without my consent</p>
<p>Contact Information</p> <p>Please mark how you wish to be contacted (mail, telephone, e-mail).</p>	<p><input type="checkbox"/> By Post: Please provide mailing address:</p> <p>_____</p> <p>_____</p> <p><input type="checkbox"/> By Telephone: _____</p> <p><input type="checkbox"/> By E-mail _____</p>
<p>Description of Incident or Grievance:</p>	<p>What happened?</p> <p>_____</p> <p>_____</p> <p>Where did it happen?</p> <p>_____</p> <p>_____</p> <p>Who did it happen to?</p> <p>_____</p> <p>_____</p> <p>What is the result of the problem?</p> <p>_____</p> <p>_____</p>
<p>Date of Incident/Grievance</p>	<p><input type="checkbox"/> One time incident/grievance (date _____)</p> <p><input type="checkbox"/> Happened more than once (how many times? _____)</p> <p><input type="checkbox"/> On-going (currently experiencing problem)</p>
<p>What would you like to see happen to resolve the problem?</p>	<p>_____</p> <p>_____</p>
<p>Other Remarks</p>	<p>_____</p> <p>_____</p>
<p>Please return this form to:</p>	<p>[__ name _____], Public Relations (PR) Manager,</p> <p>[__ company name _____],</p> <p>Address _____</p> <p>Tel.: _____ or E-mail: ____@____.com .</p> <p>Date:</p>

Annexure 2 Incident/Accident Notification Form

INCIDENT REF	<input style="width: 80%;" type="text"/>
IMMEDIATE INCIDENT NOTIFICATION	
IN THE EVENT OF A FATALITY OR MORE THAN ONE SERIOUS INJURY REQUIRING HOSPITALISATION PLEASE COMPLETE THIS FORM AND EMAIL TO	

1. INCIDENT DETAILS			
Company	<input style="width: 95%;" type="text"/>	Date of incident	<input style="width: 95%;" type="text"/>
		Time of Incident	<input style="width: 95%;" type="text"/>
Location of incident	<input style="width: 95%;" type="text"/>	Type of Incident	Environmental <input type="checkbox"/> Injury <input type="checkbox"/>

2. WHAT HAPPENED

3. WHAT SUPPORT WILL BE PROVIDED TO THE WORKER / WORKERS FAMILY
(Financial as well as any other type of support)

4. INJURED WORKERS						
Employee / Contractor	Male / Female	Age	Job Title / Description	Time with company	Cause	Injury Type (Major / Fatal)

5. ENVIRONMENTAL			
Type (Oil Spill / Gas /Hazardous)	Total Loss (Litres /KGs)	Cause	Damage

6. OTHER RELEVANT INFORMATION			
Authorities informed?	YES <input type="checkbox"/>	NO <input type="checkbox"/>	What immediate corrective actions were taken after the incident: <div style="border: 1px solid black; height: 100px; width: 95%; margin-top: 5px;"></div>
Media Attention?	YES <input type="checkbox"/>	NO <input type="checkbox"/>	
Any effects off site	YES <input type="checkbox"/>	NO <input type="checkbox"/>	
Person Completing Form	<input style="width: 95%;" type="text"/>		
Position	<input style="width: 95%;" type="text"/>		

Annexure 3 Semi Annual Reporting Template

Semi Annual ES Monitoring Report Template

1. Executive Summary

This section shall provide summarized and concise information on the project components, ES instruments compliance ensured during the reporting period.

2. Introduction

This chapter shall discuss the following sub-headings.

- 2.1 Brief Background
- 2.2 Objective of the Project
- 2.3 Project Categorization
- 2.4 Progress of Different Components (Overall project progress and project of reporting period in %)
- 2.5 Scope and Requirement of Monitoring Report
- 2.6 Methodology of Monitoring
- 2.7 Structure of the report

3. Implementation Progress of ES Instruments

This section shall discuss in detail the compliance of ES requirements on Sub project sites.

- 3.1 Pollution Prevention Plan (visual observations, Water and noise monitoring results)
- 3.2 Waste Management (quantity of waste generated including the hazardous waste from different locations, management and disposal)
- 3.3 Occupational Health and Safety
- 3.4 Non-Compliances Observed and Corrective Actions Issued
- 3.5 Incident/Accident Detail
- 3.6 Trainings/Toolbox talks Delivered
- 3.7 Implementation Status of SEP (Consultations with different stakeholders and their feedback)
- 3.8 Grievance Redressal Mechanism (Number and nature of complaints received, resolved, unresolved and if there are reasons of delay in resolving the complaints, please explain)
- 3.9 Capacity Building of Staff
- 3.10 Status of Previous Pending Actions/Non-Compliances
- 3.11 Any other ES Issue

ES Audit

- Findings of Semiannual ES Audit
- Corrective Actions

4. Action Plan

Briefly describe the E&S implementation activities planned for next reporting period

Annexure

- Filled Monitoring Checklists
- Noise and Vibration Monitoring Reports
- Consultation Participants
- Training Participants
- Pictures with Captions
- Other Relevant Reports/Data