ASIAN INFRASTRUCTURE INVESTMENT BANK

December 9, 2024

Sovereign-backed Financing

Approval Project Document

P000889 Georgia: Tbilisi Metro Modernization Project

Currency Equivalents

As of October 31, 2024

Currency Unit – Georgian Lari (GEL)
USD1.00 = GEL2.71
GEL1.00 = USD0.37

Fiscal year

January 1 – December 31

Abbreviations

AIIB	Asian Infrastructure Investment Bank
CBA	Cost-benefit Analysis
EIRR	Economic Internal Rate of Return
ENPV	Economic Net Present Value
ES	Environmental and Social
ESMP	Environmental and Social Management Plan
ESS	Environmental and Social Standard
ESP	Environmental and Social Policy
FM	Financial Management
GBV	Gender-based Violence
GHG	Greenhouse Gas
GoG	Government of Georgia
GRM	Grievance Redress Mechanism
IFI	International Financial Institution
MDB	Multilateral Development Bank
MoF	Ministry of Finance of Georgia
OHS	Occupational Health and Safety
O&M	Operations and Maintenance
PAA	Paris Agreement Alignment
PDS	Project Delivery Strategy
PIU	Project Implementation Unit
POM	Project Operations Manual
PP	Procurement Plan
PPM	Project-Affected People's Mechanism
SEP	Stakeholder Engagement Plan
TTC	Tbilisi Transport Company LLC
VOC	Vehicle Operating Cost
VOT	Value of Time

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1. Summary Sheet

Project No.	P000889
Project Name	Tbilisi Metro Modernization Project
AIIB Member	Georgia
Borrower	Georgia
Project Implementing Entity	Tbilisi Transport Company LLC
Sector	Transport
Subsector	Urban Transport
Alignment with AIIB's thematic priorities	Green infrastructure; Technology-enabled Infrastructure
Project Objective	To enhance the efficiency, reliability, safety and sustainability of the Tbilisi Metro system through the procurement of new rolling stock.
Project Description	The Project encompasses the procurement of 97 electric metro cars (comprising 13 units of 4-car and 9 units of 5-car metro trains) to replace the existing metro cars scheduled for decommissioning between 2025 and 2030 due to safety reasons and operational life span limitations. The Project will also strengthen institutional capacity with targeted training programs and a cybersecurity assessment. Finally, in line with the broader future metro modernization plan, which includes rehabilitation of two depots and a tunnel, the Project will finance the engagement of consultants to conduct feasibility studies and develop preliminary designs, laying the foundation for upcoming infrastructure improvements in the Tbilisi Metro system.
Implementation Period	12/01/24 06/30/31
Expected Loan Closing Date	12/31/31
Proposed Amount of AIIB Financing (USDm)	USD140.00[1]
Financing Plan	Total program: USD235 million - AIIB: USD140 million - Government of Georgia: USD95 million
ES Category (or AIIB equivalent, if using another MDB's ES Policy)	B
ES Category Comments	AIIB proceeds only to finance rolling stock acquisition. The Environmental and Social impacts are limited to the Project area and temporary in nature. No land acquisition and resettlement are expected.
Risk (Low/Medium/High)	Medium

[1] The Loan is expected to be denominated in EUR, up to USD140.00 million equivalent. The costs and funding in this report will be presented in USD.

Conditions of Effectiveness	a) Project Operations Manual (POM) is furnished in form and substance satisfactory to the Bank; b) Execution of a Subsidiary Agreement between the Tbilisi City Municipality and the Ministry of Finance; and c) The PIU has been duly established and staffed.
Key Covenants	The Borrower and TTC shall ensure that: a) the rolling stock Transportation Management Plan has been submitted by TTC to AIIB, in form and substance satisfactory to the Bank, prior to the mobilization of rolling stock from the supplier's facility to TTC's facility. b) the ESMP for the decommissioning phase has been prepared and furnished in form and substance satisfactory to the Bank, prior to the start of decommissioning activity.
Conditions for Disbursement	NA
Retroactive Financing (Loan % and dates)	Retroactive financing of up to 20% of the loan amount for eligible expenditures incurred not more than 12 months prior to the date of the loan agreement.
Policy Waivers Requested	No
Policy Assurance	The Vice President, Policy and Strategy, confirms an overall assurance that the Bank is in compliance with the policies applicable to the Project.
Economic Capital (ECap) Consumption (USDm)	24.83 (21.99%)
Project Approval (Board/President)	President

President	Liqun Jin
Vice President	Konstantin Limitovskiy
Acting Director General	Konstantin Limitovskiy
Team Leader	Natalia Sanz, Senior Investment Officer
Back-up Team Leader	Yaxin Yan, Investment Officer
Team Members	Mudassar Hassan, Environment Specialist Shonell Robinson, Financial Management Specialist Jingrong He, Senior Procurement Specialist Alberto Alcubilla Arribas, Senior Investment Solutions Specialist Kezia Paladina, Associate Counsel Jiaming Yu, Project Assistant
Credit Officer	Young Bong Cho, Senior Sovereign Risk Officer

2. Context

2.1 **Country and Macroeconomic Overview.** Georgia, located at the crossroads of Eastern Europe and Western Asia, is a country rich in history and culture, with a strategic position along key trade routes. The capital city, Tbilisi, is the country's largest urban center and serves as the political, economic, and cultural hub of Georgia. Tbilisi is known for its diverse architecture, reflecting its long history and the influences of various empires that have controlled the region. The city is a major economic driver, benefiting from Georgia's economic policies and growing tourism sector. As a vibrant metropolitan area, Tbilisi is also a key transportation hub, connecting Georgia with neighboring countries and facilitating international trade. The city plays a central role in the nation's ongoing development, offering a blend of historical and modern infrastructure.

2.2 Georgia, an upper-middle-income country with a GDP per capita of USD8,210 in 2023 and USD8,880 expected in 2024, has experienced strong economic growth, driven by investments and averaging 5.9 percent from 2003 to 2023. However, challenges such as an aging population, outward migration, and infrastructure bottlenecks in transport and energy persist. The government is addressing these issues by allocating around 8 percent of GDP to capital investments. Unemployment remains high, partly due to structural issues and low educational attainment. Nonetheless, continued fiscal reforms and strategic investments are expected to support sustainable growth and development. See Annex 4 for more details on the macroeconomic situation of the country.

2.3 **Sector Overview.** Tbilisi's urban transport system has been increasingly strained by rapid urbanization and economic growth, leading to overutilization of existing infrastructure and a significant rise in motorized individual traffic. Transport contributes to approximately 90 percent of the city's air pollution, presenting severe environmental challenges[2]. To address these issues, Tbilisi, with support from international organizations like the European Bank for Reconstruction and Development (EBRD) and the Asian Development Bank (ADB), has implemented various sustainable urban mobility projects aimed at reducing traffic congestion, improving public transport, and promoting eco-friendly transport options.

2.4 The Tbilisi Metro, established in 1966, is a critical component of Georgia's urban public transportation system, comprising two lines and 23 stations over approximately 27 kilometers. This system facilitates the movement of over 430,000 passengers daily and plays a vital role in reducing traffic congestion, lowering greenhouse gas (GHG) emissions, and promoting sustainable urban development. The Tbilisi Metro is operated by Tbilisi Transport Company LLC (TTC), which is 100 percent owned by Tbilisi City Municipality. TTC provides urban transport services in the city by metro, bus and cable car as well as managing parking spaces in the administrative boundaries of Tbilisi.

2.5 **Addressing Key Development Challenges/Project Contributions.** Despite its importance, the Tbilisi Metro faces challenges such as aging infrastructure and rolling stock. The system is currently struggling due to years of under-investment, leading to the deterioration of critical infrastructure components. Despite TTC's continued maintenance efforts, the overall condition of the metro system has declined, resulting in worn-out components that require urgent upgrades and refurbishment. Additionally, the metro system

[2] Tbilisi City Municipality and EBRD. Tbilisi Green City Action Plan (2017 – 2030).

suffers from low accessibility, weak multimodal transfer capabilities at interchange stations, and subpar energy efficiency compared to more modern metro systems worldwide.

2.6 TTC manages a fleet of 192 metro cars that were originally designed for a 35-year operational lifecycle but have been refurbished, with their lifespan extended to a maximum of 50 years. These cars are expected to reach the end of their operational lifespan between 2025 and 2039, and further extension is not feasible[3]. Recognizing the urgency of this situation, the Tbilisi Metro Modernization Project (herein, the "Project") aims to replace the aging of 97 metro cars scheduled for decommissioning between 2025 and 2030.

2.7 This replacement is crucial not only for ensuring the safety and reliability of the metro system but also for addressing Tbilisi's environmental priorities as identified in the Green City Action Plan, which was approved by the city in September 2017. The Project will help modernize the metro system, improve energy efficiency, and enhance overall service quality for the citizens of Tbilisi.

[3] Annex 2 provides detailed information on rolling stock, including production, repair, and expiration schedules.

3. Rationale

3.1 **Project Objective.** To enhance the efficiency, reliability, safety and sustainability of the Tbilisi Metro system through the procurement of new rolling stock.

3.2 **Expected Beneficiaries.** The primary beneficiaries of the Project will be the daily metro commuters, who currently exceed 430,000 passengers per day. By 2050, this number is projected to reach approximately 840,000 passengers per day. These commuters will benefit from a safer and more reliable service, enhanced comfort, higher metro capacity, and technological advancements in the new metro cars. Local businesses and institutions will benefit indirectly through economic benefits generated by the improvement of the metro system, that can boost transport ridership, reduce congestion and stimulate the economic activity in the surrounding areas. TTC will achieve greater operational efficiency, while the environmental gains from reduced GHG emissions contribute to overall public health and urban livability.

3.3 **Expected Results.** By adding new state-of-the-art rolling stock to the Tbilisi Metro system, the Project anticipates enhancing overall metro transportation efficiency and reliability, resulting in smoother and safer travel conditions as well as improved accessibility and reliability for both commuters and businesses. The Project Objective Indicators will include metro ridership, showing the number of people directly benefiting from the use of the improved system, number of corrective repairs of metro cars, levels of noise and vibration inside the cars, train energy consumption, and reduction in GHG emissions due to the switch from polluting transportation modes, like cars and buses, to metro. Details on the Project objective and intermediate indicators can be found in the Results Monitoring Framework in Annex 1.

3.4 **Strategic Fit for AIIB.** The Project directly aligns with AIIB's thematic priorities of Green Infrastructure and Technology-enabled Infrastructure, as well as with AIIB's Sustainable Cities and Transport Sector Strategies.

a) Green Infrastructure: The Project directly supports the development of green infrastructure through the procurement of electric rolling stock and the enhancement of the metro's environmental sustainability. By promoting a shift from private vehicle use to public transport, it contributes to reducing GHG emissions.

b) Technology-enabled Infrastructure: The incorporation of advanced technologies in the new metro cars, including modern signaling systems, energy-efficient operations, and improved passenger information services, aligns with AIIB's emphasis on leveraging technology to enhance infrastructure projects.

c) Sustainable Cities Strategy: By investing in the procurement of new, energy-efficient metro cars the Project directly addresses the need for modern, resilient, and reliable urban transport systems. These upgrades are crucial for ensuring that the metro system can handle current demands and future growth, enhancing the overall mobility within the city.

d) Transport Sector Strategy: The Tbilisi Metro Modernization Project aligns with AIIB's focus on transport integration and infrastructure upgrades, aiming to enhance Tbilisi's metro system through modern, energy-efficient rolling stock and improved infrastructure. This initiative supports a more resilient and efficient urban transport

network, contributing to sustainable urban development and aligning with AIIB's objectives of creating integrated, sustainable transport systems.

3.5 Additionally, the Project directly aligns with the Sustainable Development Goals 11, Sustainable Cities and Communities, and 13, Climate action.

3.6 **Paris Agreement Alignment (PAA) and Climate Finance.** In line with AIIB methodology for assessing the alignment with the mitigation and adaptation goals of the Paris Climate Agreement, the Project is assessed as aligned. Details on the assessment are provided in Section 5.D. In line with the joint Multilateral Development Banks (MDB) methodology for tracking mitigation finance, it is estimated that USD140 million of the Project cost contributes to support mitigation (100 percent). The Project does not qualify for climate adaptation finance as there is no material climate risk.

3.7 **Value Addition by AIIB.** AIIB's involvement provides technical expertise, advisory services, and capacity building. This includes access to global best practices in metro system development, operation, and sustainability, ensuring the incorporation of the latest innovations. AIIB's emphasis on rigorous environmental and social standards promotes the Project's sustainability and community impact. Moreover, AIIB's experience in risk management and adherence to Environmental, Social, and Governance (ESG) standards helps mitigate potential risks, ensuring smoother project execution. Furthermore, AIIB's commitment can attract additional financiers, leveraging more resources for implementation of future urban transportation improvements in Tbilisi.

3.8 **Value Addition to AIIB.** This first AIIB stand-alone project in Georgia will bolster the Bank's relationship with the Member, while enhancing AIIB's expertise in modernizing outdated Soviet-era infrastructure, increasing its adaptability and knowledge in meeting the unique needs of transitioning economies. The Project will also strengthen AIIB's capacity to update old transport systems to modern standards, a skill set that can be applied to similar projects globally, elevating AIIB's role in supporting economies with complex infrastructures and solidifying its status as a major contributor to global urban and economic development.

3.9 **Lessons Learned.** Some of the lessons learned from previous AIIB projects and from other projects with similar characteristics, and how those have been incorporated in the Project, are:

a) Early assessment and management of interface risks between systems, such as signaling, radio, and energy power systems, and civil works. To enhance interoperability, simplify maintenance, and reduce costs, this Project applies this lesson by making interface management a key responsibility of the rolling stock supplier. The supplier is tasked with preparing detailed "interface files" for each identified interface, ensuring compatibility with infrastructure elements like tunnels and station platforms. Additionally, the tender specifications focus on performance and functionality, allowing bidders to propose the most suitable technical solutions that align with these goals, thereby ensuring smooth integration and operational efficiency throughout the Project's lifecycle.

b) Conducting comprehensive compatibility testing with existing infrastructure is crucial for the seamless integration of new rolling stock, and this Project incorporates several measures to ensure such compatibility. The tender documentation will provide general

information about the existing infrastructure to guide bidders in preparing their technical proposals. During the design stage, TTC will supply additional detailed information to the rolling stock supplier, allowing for a thorough design review to identify and rectify any compatibility issues. Finally, compatibility will be physically verified during the commissioning stage through rigorous testing, ensuring that the new rolling stock integrates smoothly with the existing tracks, signaling systems, and platforms.

c) Beyond physical and mechanical compatibility, new rolling stock must be compatible with existing operational procedures, safety standards, and passenger services. For the Tbilisi Metro, the rolling stock's performance specifications, including speed, braking, and acceleration, are designed to be fully compatible with current operational rules and procedures. Safety standards adhere to European Union (EU) norms, covering fire protection, crashworthiness, and passenger emergency evacuation. Passenger services are designed to be accessible to all, including those with reduced mobility, and include features like passenger information systems, communication, and door services. Additionally, the new train control systems will be integrated with existing systems, ensuring seamless operation and compatibility with current signaling. Emergency response procedures will remain consistent, allowing for safe evacuation of passengers in scenarios such as a train stopping in a tunnel.

d) The introduction of new, technologically advanced trains requires comprehensive training programs for operators and maintenance staff. The Project has included a detailed training program as part of the services to be provided by the rolling stock suppliers. The program covers all aspects related to the new train technology, ensuring that the staff is fully equipped to manage the features and technical requirements of the modern trains. The rolling stock supplier will develop the training program, which must be approved by TTC before any training activities commence, to ensure that operations and safety standards are maintained at the highest level.

4. Project Description

4.1 **Project Scope.** This Project focuses on acquiring 97 new electric metro cars, enhancing TTC staff capabilities through training, and developing designs for future infrastructure rehabilitation. In addition to purchasing modern rolling stock, the Project will strengthen institutional capacity with targeted training programs and a cybersecurity assessment. In line with the broader future metro modernization plan, which includes rehabilitation of two depots and a tunnel, this Project will finance the engagement of consultants to conduct feasibility studies and develop preliminary designs. These studies will lay the foundation for upcoming infrastructure improvements in the Tbilisi Metro system, ensuring that the depots and tunnel are upgraded to meet modern standards in the future.

4.2 **Components.**

4.2.1 **Component A: Rolling Stock Acquisition (Total USD232.3 million, AIIB USD137.3 million).** This component will finance:

- Subcomponent A.1. Rolling stock acquisition (USD230 million, AIIB USD135 million)*:* This subcomponent comprises the procurement of 97 new electric metro cars, including 13 units of 4-car and 9 units of 5-car configurations. This subcomponent will also finance a driving train car simulator for training of TTC staff.
- Subcomponent A.2. Supervision Consultant (USD2.3 million, fully financed by AIIB)*:* This subcomponent will cover the costs of engaging a supervision consultant who will oversee the manufacturing, delivery, and commissioning of the new rolling stock. This consultant will ensure that all technical specifications and quality standards are met, providing ongoing support and expert advice throughout the procurement process and initial operation phases.

4.2.2 **Component B: Capacity Building and Institutional Strengthening (USD0.5 million; fully financed by AIIB).** This Component will (i) provide support to the Project Implementation Unit (PIU) through the hiring of consultants to strengthen the technical capacity for project management, procurement, monitoring, financial management and environmental and social activities; (ii) finance strategic training programs for TTC staff, focusing on key technical aspects related to operation and maintenance of modern metro systems, encompassing workshops and seminars on best practices in urban metro operations, safety management, and customer service, covering tuition, travel, per diem, and other required costs, by reimbursement; and (iii) provide a cybersecurity assessment for TTC; for this study to be consistent with Georgia's progress on the topic, TTC will discuss with the Ministry of Defense prior to initiating this process, to ensure alignment with the ongoing national initiatives.

4.2.3 **Component C: Feasibility and Preliminary Designs for Depots and Tunnel Rehabilitation (USD1.85 million; fully financed by AIIB).** This Component comprises the hiring of a consultancy firm to conduct feasibility studies and develop preliminary designs for the rehabilitation of two depots and a tunnel as part of the broader metro modernization scope. Preliminary environmental and social assessment will be carried out as part of the feasibility study. The consultancy services will be procured following AIIB's procurement processes. The work will be carried out during

the Project implementation phase to ensure that the designs meet the required standards. The rehabilitation works are expected to begin in the next three to five years.

4.3 **Cost and Financing Plan.**

Table 1. Project Cost and Financing Plan

Item	Project Cost (USD m, VAT excl.*)	Financing (USD m and %)	
		AIIB	GoG
Component A. Rolling stock acquisition.	**232.3**	**137.3**	**95**
A.1) Rolling stock acquisition	230	135	95
A.2) Supervision Consultant	2.3	2.3	0
Component B. Capacity Building and Institutional Strengthening.	**0.5**	**0.5**	**0**
Component C. Feasibility and preliminary designs for depots and tunnel rehabilitation.	**1.85**	**1.85**	**0**
Front-end-Fee capitalization	**0.35**	**0.35**	**0**
Total	**235**	**140 (59.6%)**	**95 (40.4%)**

Source: TTC

***** *All VAT payments due from project activities will be financed by GoG counterpart funds.*

4.4 **Implementation Arrangements and Readiness**

4.4.1 **Implementation Arrangements.**

(i) Project Implementing Entity. The TTC, a municipality owned enterprise under the authority of the Tbilisi City Municipality, responsible for managing public transportation services within the city, including metro, bus, and cable car operations, will be the Project implementing entity. TTC is legally structured to function as an independent entity, yet it remains closely aligned with the city's strategic transportation and infrastructure objectives, operating under the oversight and regulation of the municipal government. A subsidiary agreement pertaining to the internal arrangements (including financial arrangements) between the Tbilisi City Municipality, TTC, and the Ministry of Finance (MoF) will be entered into by the three institutions.

(ii) Project Implementation Unit (PIU). TTC will designate a PIU within its organizational structure to oversee and manage the execution of the Project. This PIU will be responsible for coordinating all aspects of the Project, ensuring compliance with AIIB's policies and procedures, and local regulations, and liaising with relevant stakeholders, including the City Municipality and external consultants. TTC General Director will submit a signed letter allocating the specific staff to the PIU. This will be a loan condition for effectiveness.

(iii) Procurement.

a. **Procurement Policy.** Procurement financed in whole or in part by AIIB loan proceeds will be carried out in accordance with (i) Procurement Policy (June 26, 2024); (ii) Directive on Procurement Instructions to Recipients (July 26, 2024); and (iii) the provisions stipulated in the Loan Agreement.

b. **Institutional Arrangements.** TTC is responsible for the Project procurement cycle management from the Project Delivery Strategy (PDS) and Procurement Plan (PP) preparation to implementation. The Procurement Department at TTC handles commercial responsibilities, such as preparing the procurement strategy and plan, conducting market engagement surveys, and carrying out procurement procedures. Meanwhile, the Metro Exploitation Department at TCC is responsible for preparing technical specifications. A Tendering Evaluation Committee (TEC), comprising TTC professionals from relevant fields, will conduct the tender evaluations.

c. **Project Delivery Strategy (PDS).** Rolling stock procurement comprises approximately 95 percent of the loan. The PDS assesses the Project's operational context, agency capacity and resources and makes the market analysis of rolling stocks supply, focusing on a fit-for-purpose strategy for procurement. Following a market survey, it proposes a one-stage international open competitive tendering with the lowest evaluated responsive tender. This aligns with supplier availability and technical specifications. Risks identified include unfamiliarity with AIIB procurement requirements and counterpart funding availability.

d. **Advance Procurement and Retroactive Financing.** Retroactive financing up to 20 percent of the loan amount would be available for eligible expenditures incurred up to 12 months prior to the date of the Loan Agreement. The PDS sets forth the contracts expected to be signed before loan signing, together with the relevant Bank review procedures.

e. **Project Procurement Management System (PPMS).** PPMS will be used to prepare, clear and update Procurement Plans and conduct all procurement transactions for the Project.

(iv) Financial Management (FM). TTC's Finance and Accounting Department, headed by a Director of Finance, will hold overall responsibility for the Project's Financial Management, encompassing planning and budgeting, accounting, financial reporting, funds flow and disbursements, internal controls, and auditing. TTC will manage the day-to-day FM responsibilities of the Project. While City Municipality will oversee the planning and utilization of loan proceeds by ensuring the inclusion of the Project budget in both the Municipal and National Government budgets, as well as reviewing and authorizing documents for fund requests to facilitate payments.

(v) Environmental and Social (ES) Arrangements. The Deputy Head of the Environment and Safety Department of TTC will be part of the PIU and will be overall responsible to supervise the Project's ES activities in the PIU, and an ES Advisor of TTC will provide necessary support and guidance to the team to implement the relevant ES measures.

(vi) Project Operations Manual (POM). The POM is a comprehensive document that will detail the procedures, and guidelines for the implementation and management of the Project, including details on Project objectives, organizational structure, roles and responsibilities, FM, procurement processes, ES safeguards, monitoring and evaluation frameworks, and reporting. The POM will be a reference for all the involved areas and stakeholders, ensuring consistency during execution. The POM finalization to the satisfaction of the Bank will be a loan effectiveness condition.

4.4.2 **Implementation Period.** The implementation period for the Project is expected to be six and a half years, from December 2024 to June 2031.

4.4.3 **Implementation Readiness.**

(i) Allocation of Staff to the PIU: Although the official allocation of the PIU staff is a condition for effectiveness, the relevant personnel are already working in the Project and have been part of the discussions since its inception.

(ii) Technical specifications for the rolling stock have been finalized, ensuring that they meet international standards and align with the Project's goals. See Annex 2 for details.

(iii) Procurement readiness: The procurement process is advancing, with PDS and PP already prepared. Advance procurement actions, such as market engagement, have been completed. The tender document is under advanced preparation, expected to be finished prior to Project approval. All Procurement activities align with AIIB's procurement policies, ensuring transparency, competitiveness, and value for money.

(iv) Environmental and Social Instruments: An Environmental and Social Management Plan (ESMP) and a Stakeholder Engagement Plan (SEP) have been prepared by TTC to manage the environmental and social risks and impacts associated with the Project and are currently under review by the Bank. Disclosure will be done in accordance with AIIB requirements for Category B projects.

4.4.4 **Monitoring and Evaluation.** TTC PIU will assume the primary responsibility for monitoring the Project's progress and performance, following the results indicators outlined in the Results Monitoring Framework in Annex 1, and in coordination with the City Municipality, with the support of the Supervision Consultant. This monitoring will be informed to the Bank through the submission of semiannual reports. To ensure effective monitoring and reporting, the POM will provide comprehensive guidance on the respective roles, responsibilities, and coordination between the PIU, the City Municipality and the MoF.

4.4.5 **Reporting.** The Project related reports during implementation will include:

(i) Progress Monitoring Report, that will ensure that AIIB receives a comprehensive update on the Project's progress, challenges, and financial management, while also addressing compliance with ES safeguards. The progress of the Results Monitoring Framework should be presented in these reports, as well as Interim

Unaudited Financial Reports (IUFR) and a summary of the ES report. This report will be presented by the PIU to the Bank every calendar semester, due one month after the end of the reported period.

(ii) IUFRs will be required as part of the Project Monitoring Reports, including details on the Project's financial status, covering expenditures, disbursements, and any deviations from the approved budget. These IUFRs will feature key financial statements specific to the Project, ensuring AIIB can accurately track fund usage and financial progress, thereby maintaining transparency and allowing the Bank to assess the Project's ongoing financial management and viability.

(iii) Annual external audit reports must be submitted to the Bank within six months of the financial year-end. The Terms of Reference (ToR) for the audit and reporting templates will be included in the POM, subject to the Bank's approval.

(iv) ES Monitoring Report for AIIB are designed to ensure the Project's alignment with the Bank's Environmental and Social Framework (ESF). These reports will provide a structured summary of the Project's ES performance, assess the effectiveness of institutional arrangements and mitigation measures, and document the completion of action plans. They also cover training, stakeholder engagement, grievance tracking, incidents, and offer recommendations for future improvements.

4.4.6 **AIIB's Implementation Support.** AIIB will conduct supervision and implementation support missions twice a year, along with periodic technical review visits to ensure effective support throughout various project stages. Additionally, technical and procurement consultants engaged by AIIB during the Project preparation phase will continue to support TTC in the tendering process during early implementation.

5. Project Assessment

A. Technical

5.1 **Project Design.** TTC plans to modernize its metro fleet by purchasing a total of 212 metro cars, which includes 13 units of 4-car trainsets (52 cars) and 32 units of 5-car trainsets (160 cars). From this broader plan, AIIB Project encompasses financing the acquisition of 97 metro cars (13 units of four-car trainsets and 9 units of five-car trainsets) to replace old rolling stock currently in service. The 97 metro cars and the simulator are expected to be delivered accordingly to the schedule below:

Table 2. Delivery Schedule

Description	Quantity	2024	2025	2026	2027	2028	2029	2030
4-Metrocars Train	13	-	2	7	4	-	-	-
5-Metrocars Train	9	-	-	-	-	3	3	3
Metro Train Simulator	1	-	1	-	-	-	-	-

5.2 **Rolling Stock.** TTC is upgrading Tbilisi's urban mobility system by introducing new metro trainsets specifically designed for long-term reliability, with a service life of at least 45 years or 4.5 million kilometers. These trainsets are engineered to integrate seamlessly with the existing fleet, ensuring compatibility in mechanical coupling and air brake connections, and are equipped with detailed rescue operation protocols in case of train failures. The trainsets will feature a basic configuration of either 4 or 5 cars, with the flexibility to extend from 4 to 5 cars by adding an additional car in the future. Both configurations will maintain consistent design, appearance, and functionality, and will include inter-carriage open gangways for easy passenger movement between cars. This modernization effort aims to enhance the efficiency, reliability, and overall performance of Tbilisi's metro system, significantly improving the passenger experience.

5.3 **Driving Cab Simulator.** The driving cab simulator is designed to replicate a real train cab, complete with all operational controls and displays. It features an instructor's console for monitoring and control, as well as a communication control console. The simulator includes a visual system that accurately replicates track and platform views, and an audio system that creates a realistic sound environment. This comprehensive training tool provides an immersive experience for trainees, helping them develop the skills and familiarity needed for effective train operations.

5.4 **Ridership/Passenger Demand.** The metro cars upgrading will contribute to serve increase in traffic demand due to the economic growth, rapid urbanization and urban expansion along the two metro lines. The primary beneficiaries of the Project are the metro commuters. In 2023, the total number of passengers reached 159.5 million, with an average of 437,012 daily passengers. It is projected that the overall ridership for the Tbilisi metro will reach 305.9 million by 2050. A detailed ridership forecast can be found in Annex 3 Demand Analysis section.

5.5 **Operational Sustainability.** The Operations and Maintenance (O&M) activities will be carried out by TTC, including O&M planning, execution and monitoring. Key activities include

train operation, security, maintenance of systems and rolling stock, ticketing, housekeeping of train stations and depots. TTC has a rigorous maintenance process for the metro system to ensure long-term operation sustainability and proper functioning by addressing routine, preventive, and corrective needs, and this process will be applied to the new rolling stock, with staff properly trained into the new requirements.

5.6 Maintenance for the Tbilisi Metro system is categorized into Routine, Preventive, and Corrective Maintenance, each with specific thresholds and manpower requirements. Routine Maintenance is performed after 20 hours, 4,500 km, and 9,000 km of driving, requiring 4 to 15 persons per train. Preventive Maintenance occurs after 60,000 km, 240,000 km, and 480,000 km of driving, involving 15 to 17 persons per train. Corrective Maintenance is conducted after 960,000 km and 2,880,000 km of driving, with 20 persons needed per train for these tasks.

B. Economic and Financial Analysis

5.7 **Economic Analysis.** The Project's economic viability was assessed using a cost-benefit analysis (CBA) by comparing with- and without-project scenarios. The evaluation covers 30 years of project economic life from 2025 to 2054, including 6 years of rolling stock acquisition and replacement per delivery schedule (2025 – 2030) and 30 years of operation (2025 – 2054)[4]. The economic costs of the Project include the capital cost of rolling stocks and the O&M cost of the metro system. The quantifiable economic benefits comprise value of time (VOT) savings for passengers, vehicle operating cost (VOC) savings, and reduction in GHG emissions. Traffic demand forecasts were estimated based on a regression model with real GDP as the key explanatory variable. Modal shift was modelled by considering relative travel times for different modes in selected origins and destinations.

5.8 The Project is deemed economically viable, with the economic internal rate of return (EIRR) and economic net present value (ENPV) estimated to be 42 percent (well above the 9 percent social discount rate) and USD739 million, respectively. A sensitivity analysis has also been conducted by (i) increasing up to 25 percent in costs; (ii) decreasing up to 25 percent in benefits; (iii) reducing up to 25 percent in ridership, and (iv) combined increasing 25 percent in cost and decreasing 25 percent in benefits. In all the scenarios, the Project is still economically viable. For further details, please refer to Annex 3.

5.9 **Financial Analysis.** The financial assessment is done considering the legal status of TTC as an entity owned by the Tbilisi City Municipality, and dependent on the municipal budget to cover their O&M needs. The details below ensure the financing of the O&M of the new rolling stock will be covered, ensuring sustainability after the Bank has finished Project implementation.

5.10 **Operations and Maintenance Budgeting.** The budget process for O&M follows a structured timeline and methodology. In September, the operations department submits its requirements to the procurement and financial departments. The City Municipality allocates funds based on the kilometers operated by the trains, with the budget for the following year being estimated alongside the projected kilometers. The budget is then disbursed on a monthly basis according to the actual kilometers operated. Additionally, the metro generates

[4] Since the Project consists of a replacement of rolling stock, metro operation continues during the implementation period.

other income streams, approximately 2 percent of the total, from renting out stores located in the stations.

5.11 **Contingencies.** In the event of a change in budget requirements, a request must be submitted to City Municipality, including a justification for such increase. The response time from City Municipality for such requests can take up to 1.5 months. There have been instances where City Municipality has declined requests for budget increases, though they are generally accommodating. Cash flow adjustments occur every three months.

5.12 **Maintenance of the New Cars.** For the maintenance of new trains, there is a three-year guarantee period to be included into the contract, during which total TTC O&M costs are expected to decrease. After this guarantee period, O&M costs are expected to be lower than those of the old cars, due to the new trains' advanced diagnostic systems, which allow for a more timely and effective maintenance, and require fewer staff for it. Additionally, the energy recuperation systems in the new trains will improve financial efficiency by reducing electricity consumption. The new trains also have fewer parts that need replacement, and the bogies (wheel assemblies), main component of the cost, are designed to last throughout the entire life cycle of the train, unlike the older models that require more frequent changes.

C. Fiduciary and Governance

5.13 **Procurement.** TTC has over 10 years of experience in International Financial Institutions (IFI)-supported projects for infrastructure reconstruction and vehicle supply, primarily following EBRD procurement rules. The Procurement Department, with about 18 employees across three divisions, Market Research and Planning, Tender and Reporting, and Monitoring Implementation of Agreements, handles procurement of goods, services, and works in accordance with Georgian laws. For IFI projects, a dedicated Donor Relations and Project Management Division with 14 staff members coordinates efforts. Additionally, a PIU is formed for each project, comprising experts from finance, legal, procurement, technical, and donor relations as needed. The procurement assessment indicates that there is sufficient capacity and resources available to execute the Project, and any identified gaps will be addressed through risk mitigation measures outlined in Table 3: Summary of Risks and Measures.

5.14 **Financial Management – Staffing.** The TTC Finance and Accounting Department is led by the Finance Director, who has extensive experience in the accounting and finance fields. The Cash Flow Management Division of the Finance Department will primarily handle the FM aspects of the Project. The roles, responsibilities, and reporting lines within this division are well defined and staffing capacity is deemed adequate for Project implementation. Considering that TTC is new to implementing AIIB-financed projects or an IFI operation requiring FM responsibilities, the Bank will provide ongoing support and guidance to ensure compliance with FM requirements.

5.15 **Planning and Budgeting.** The overall Project cost will be included in the Government of Georgia (GoG) and City Municipality's budget. In alignment with its budget cycle, the Finance and Accounting Department will prepare a separate annual Project budget, which will be based on the Project's work plan, procurement plan, and contractual schedule. As per standard practice, the total Project cost should be outlined in City Municipality's budget, which includes budget allocations for 2025 and estimates for 2026 and 2027. TTC typically conducts

budget variance analysis monthly. However, since rolling stocks are expected to be delivered in one batch per year, budget variance analysis will be conducted semi-annually and included in the Project progress report submitted to the Bank.

5.16 The rolling stock contract specifies that the contractor will cover the first three years of O&M costs. As a result, TTC will only need to budget for O&M costs of the new rolling stock in the years following, integrating them into its regular operational expenses. Given that TTC operates at a financial loss, which is common for public transport providers, City Municipality provides additional funding as needed to ensure that proper maintenance is upheld and that operations continue without interruption.

5.17 **Internal Controls.** Overall, the internal controls are considered adequate for the size and nature of the Project. These controls include password protection, segregation of duties, transaction reviews and authorizations, and the preparation of financial reports. Daily reconciliations are conducted between bank accounts and cash balances according to the accounting system. The Project will be governed by TTC's Finance and Accounting Manual as well as the Bank-approved POM.

5.18 **Accounting and Reporting.** Project transactions will be accounted for in accordance with the Law of Georgia on Accounting, Reporting, and Audit, which aligns with International Financial Reporting Standards (IFRS). However, Project financial reports will be prepared on a cash basis. TTC uses the accounting system "SuperFin," which effectively tracks Project transactions by activities, subcomponents, components, categories, and sources of finance. Since "SuperFin" lacks a contract management and financial reporting module, it is supplemented with an Excel database. To ensure the integrity of the Excel database, access controls are in place to restrict edits based on the segregation of duties among finance and accounting staff. Although manual data entry in Excel is prone to errors, these are infrequent due to the controls implemented to mitigate this risk. To further enhance the accounting function, TTC plans to implement SAP ERP which is an end-to-end system, covering from planning and budgeting through to financial reporting. This upgrade aims to improve efficiency and reduce the risk of errors or data inconsistencies. TTC will prepare and submit semi-annual unaudited financial reports to the Bank, which will be due within one month of the reporting period. The format of these reports will be agreed upon with the Bank and included in the POM.

5.19 **External Audit.** The Project will undergo an annual audit conducted by an Independent Auditor approved by the Bank, in accordance with the Audit Terms of Reference (ToR) approved by the Bank. The audit will be aligned with TTC's financial year, running from January to December each year. The audit report, which will include the audited financial statements and a management letter (report on internal controls), is due to the Bank within six months of the financial year-end. TTC will make the Project audit report publicly available on its website 30 days after receiving AIIB's review and clearance.

5.20 **Disbursements and Funds Flow.** The primary disbursement modalities are direct payment, advance, and reimbursements. To request funds or documentation of expenditures from AIIB, TTC will complete withdrawal application forms, and any other required supporting documents which will be specified in the disbursement letter. These documents will be submitted to City Municipality for final approval before being forwarded to AIIB.

5.21 For advances, AIIB will transfer funds to a designated treasury EUR account maintained by the MoF at the Central Bank of Georgia, also known as the State National Bank of Georgia. The MoF will convert these funds to GEL and transfer them to City Municipality's treasury single account. City Municipality will then release the funds to a segregated GEL Project Account established by TTC at TBC Bank as needed. The processing time for payments is approximately one week. All counterpart funds will be covered by City Municipality and financed through TTC's operational accounts.

5.22 **Governance and Anti-corruption.** AIIB is committed to preventing fraud and corruption in the projects it finances and places the highest priority on ensuring that financed projects are implemented in compliance with its Policy on Prohibited Practices (2016). Accordingly, the AIIB Policy on Prohibited Practices will apply to this Project. Implementation will be monitored regularly by AIIB staff. AIIB reserves the right to investigate, directly or indirectly through its agents, any alleged Prohibited Practice relating to the Project will require the borrower to take necessary measures to mitigate the risk of such practices and promptly address any issues, as appropriate. AIIB will closely monitor the work related to tender document preparation and tender/proposal evaluation under AIIB financing.

5.23 **Cybersecurity.** Between 2017 and 2019, Georgia registered around 217,000 cybercrimes, including privacy violations, espionage, and cyberterrorism, highlighting the significant cyber threats faced by the country. In 2019 and 2020, Georgia was targeted by various Advanced Persistent Threat (APT) campaigns, with attacks even striking critical infrastructure like the digital systems of the National Center for Disease Control. Recognizing these risks, the Cyber Security Bureau of the Ministry of Defense has emphasized the need to enhance cyber defense capabilities as part of national security efforts. In response, Georgia has developed its third 3-year cybersecurity strategy, focusing on building human capital, institutionalizing processes, and ensuring technological sustainability. The strategy also aims to foster a strong cyberculture, enhance public-private partnerships, and strengthen Georgia's position in international cybersecurity.

5.24 In this context, the Project's investment in transport infrastructure – considered critical infrastructure – faces significant cyber risks. A cyberattack on key systems such as Supervisory Control and Data Acquisition software (SCADA), signaling, communication, passenger information, and surveillance could disrupt metro operations. However, TTC's preparedness for cybersecurity is currently low, as no cybersecurity analysis has been conducted, and specific risk mitigants have yet to be identified or implemented within the existing system. The Project is including a cybersecurity assessment as part of Component B. For such study TTC will make the necessary consultations with the Ministry of Defense to ensure alignment with the national strategy.

D. Environmental and Social

5.25 **Environmental and Social Policy and Categorization.** The Bank's Environmental and Social Policy (ESP) including the Environmental and Social Standards (ESSs) and the Environmental and Social Exclusion List (ESEL) will be applicable to this Project. As per the Bank's ESP, the Project has been categorized as Category B, considering the nature and scale of the activities, which has a limited number of potentially adverse ES impacts limited to the Project area and temporary in nature that can be readily mitigated by following good

practices in an operational setting. ESS-1 Environmental and Social Assessment and Management is triggered for this Project. ESS-2 Involuntary Resettlement and ESS-3 Indigenous Peoples are not triggered as there is no land acquisition, no resettlement, no adverse impacts on livelihood and no indigenous peoples involved in this Project.

5.26 **Environmental and Social Instruments.** An Environmental and Social Management Plan (ESMP) has been prepared by the client (TTC) to address the environmental and social risks and impacts associated with the Project. Additionally, a Stakeholder Engagement Plan (SEP) has been prepared to outline a program for stakeholder engagement, including public information disclosure and consultation throughout the procurement, operation and maintenance of the new metro rolling stock.

5.27 **Environment Aspects.** The Project will generate positive environmental impacts by reducing the noise and vibration at the stations and within passenger and driver cabins and will contribute to enhance the efficiency and safety of the Tbilisi Metro. The Project will not involve any civil works, and environmental impacts are only related to mobilization, operation, maintenance and decommissioning of the metro rolling stock. Transportation of metro cars from the supplier's to TTC's facility will generate traffic and health and safety impacts during the transportation. The supplier will submit a Transportation Management Plan to TTC before the mobilization of rail cars and the respective ES provisions will be included in the tender documents. Other potential environmental impacts associated with the operation and maintenance of the new rolling stock include generation of waste (including hazardous waste), wastewater, chemical spills, fire safety risks, noise, vibration, and occupational health and safety hazards. The necessary risk management measures are outlined in the ESMP, and regular monitoring will be conducted during the rolling stock operation phase. TTC's safety procedures and systems of metro operations will be reviewed prior to trial operation of the new rolling stock.

5.28 The environmental impacts associated with the decommissioning of the old metro cars include the generation of several types of waste, such as metallic, hazardous materials (asbestos in brakes, insulation or gaskets, polychlorinated biphenyls -PCBs-, paints and batteries), non-hazardous solid waste (wood, glass, plastic, rubber), chemical (lubricants, oils, greases), and electronic (control systems, lighting, communication). Additionally, occupational health and safety risks are expected. The measures to manage the decommissioning phase impacts are included in the ESMP and it is likely that TTC will involve a licensed contractor to manage the decommissioning of old metro cars. TTC will prepare a specific Decommissioning Phase ESMP prior to the beginning of this phase, addressing waste management (hazardous and non-hazardous wastes), health and safety and emergency preparedness and response. Detailed measures related to management and disposal of asbestos will be included in the Decommissioning Phase ESMP. This plan will be reviewed and approved by the Bank prior to its implementation.

5.29 During the due diligence the Project team reviewed the ES policies and management plans relevant to the Tbilisi Metro operations and assessed the management of ES aspects in the two depots and a few metro stations. The waste management at these facilities is being carried out as per the waste management plan prepared by TTC following the Georgian waste management code and included in the ESMP. A risk assessment is conducted monthly for each facility, with necessary mitigation measures promptly implemented to address any

identified risks. Regular trainings of the staff working at the depots and stations are conducted at the Training Centre established by TTC. Measures to further strengthen the housekeeping and enforcement of the use of all personal protective equipment are included in the ESMP.

5.30 The Project will use the existing infrastructure of the Tbilisi Metro for the operation of metro cars, and existing facilities in the depots will be used for the maintenance of new rolling stock. This Project does not have any associated facility.

5.31 **Social Aspects.** The Project will improve the mobility of men and women and will contribute towards additional employment generation in formal and informal sectors. The new metro trains will accommodate the needs of all passengers, including children, passengers with luggage, senior citizens, and persons with disabilities, including those with restricted mobility and using wheelchairs. The cost of Tbilisi metro for a single ride is GEL1 and passengers can also buy a travel card for GEL2 that allows them to ride unlimited times for 90 minutes. The current number of passengers that travel daily on the metro is on average 437,012. In 2023, 159.5 million passengers used metro service. The inclusion of new train cars in the metro system will make it more comfortable and attractive for passengers, and passenger traffic is expected to gradually increase by 3 percent per year.

5.32 **Occupational Health and Safety (OHS), Labor and Employment Conditions.** OHS risks were assessed and the ESMP includes measures to mitigate potential health, safety, social and environmental hazards associated with the Project activities. An Emergency Preparedness and Response Plan (EPRP) has been developed as part of the ESMP to manage emergency risks. Regular exercises and drills shall be performed during the project implementation to ensure adequate emergency response capabilities are always in place. Suppliers and contractors will be required to implement appropriate management measures aligned with the ESMP, including labor and working conditions and health and safety matters. Compliance with the ESMP is mandatory and will be reflected in all relevant agreements and contract documents with suppliers and contractors.

5.33 **Stakeholder Engagement, Consultation and Information Disclosure.** Key stakeholders were identified and consulted during the preparation of the ESMP and SEP, with consultations following the relevant national legislation and AIIB's ESF. A stakeholder engagement plan has been developed and will be executed during Project implementation. The ESMP and SEP in English, along with their executive summaries in Georgian language, will be disclosed by the client and by AIIB on their respective websites.

5.34 **Project Grievance Redress Mechanism (GRM).** Based on the TTC's existing GRM, a project level GRM will be established to handle concerns from project-affected people and from workers and employees. The project level GRM will also be responsive to the complaints related to gender-based violence (GBV) and harassment. The GRM will become operational after Project approval. TTC has also established a hotline, publicly displayed in metro cars and stations, for individuals to raise concerns about services. This hotline will also be used for the Project, ensuring timely responses to grievances. All grievances will be recorded and tracked throughout the Project's lifecycle.

5.35 **Bank's Project-Affected People's Mechanism (PPM).** AIIB's PPM will be used for the Project. The PPM has been established by AIIB to provide an opportunity for an independent and impartial review for submissions from Project-affected people who believe they have been

or are likely to be adversely affected by AIIB's failure to implement its ESP in situations when their concerns cannot be addressed satisfactorily through the project-level GRM or the processes of AIIB's management. For information on AIIB's PPM, please visit: https://www.aiib.org/en/about-aiib/who-we-are/project-affected-peoples-mechanism/how-we-assist-you/index.html.

5.36 **Monitoring and Supervision Arrangements.** Within the PIU, the Deputy Head of TTC Environment and Safety Department will be the overall responsible for supervising the Project environmental and social activities. TTC's current environmental and social advisor will support the environmental team in implementing the ESMP and SEP. Additionally, a contract Supervision Consultant, including environmental and social staff, will oversee the implementation activities. Both TTC and the Supervision Consultant's ES staff will monitor the ES issues throughout the life of the Project, including the ESMP implementation. TTC will submit semi-annual ES monitoring reports to AIIB, and the Bank will conduct onsite inspections as needed.

E. Climate Change

5.37 **Climate Change.** The Project is Universally Aligned for the mitigation goals of the Paris Agreement (BB1) as it is listed on the Joint MDB and AIIB's methodology for assessing the alignment of AIIB investment operation with the Paris Agreement. The Project is considered aligned for the adaptation goals of the Paris Agreement (BB2) as well, given the mobile nature of the assets financed and its low material climate risk. Therefore, the Project is considered Paris Agreement Aligned.

5.38 The Project qualifies as climate mitigation finance under both category "8.1. Urban and rural public transport projects" and category "8.6. Land-based, airborne, or waterborne vehicles transporting passengers or freight with zero or low direct emissions, or associated infrastructure" listed on the Joint MDB common principles for tracking climate mitigation finance. The amount of eligible climate mitigation finance is USD140 million (100 percent). The Project does not qualify as climate adaptation finance due to the low material climate risk faced by the assets financed. The final climate finance amount is USD140 million (100 percent).

F. Gender Aspects

5.39 **Gender Aspects.** The population of Tbilisi is 53 percent female, with many women heavily relying on public transport, including the metro. There is a risk of GBV and harassment for female passengers and female staff during operations. To address these concerns, TTC has implemented a robust policy on sexual harassment, covering both workplace and metro system incidents. The policy explains the complaint mechanism, procedure, the constitution of a committee to hear complaints related to sexual harassment, terms of hearing and monitoring and evaluation mechanism. Metro staff will receive training on GBV and harassment prevention during the implementation of ESMP. The Project GRM will handle gender-related complaints from both passengers and staff, ensuring responsive and effective management of such issues.

5.40 Recognizing the importance of creating a safe and inclusive environment, TTC also upholds principles of being an equal opportunity employer. Of its 5,924, 1,096 (18.5 percent)

are women. In administration, 51 percent of the staff are female (302 out of 592), while in metro operations, 26 percent are women (694 out of 2,688 employees). TTC is committed to maintaining this gender balance. 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. The Results Monitoring Framework includes one indicator related to this.

G. Risks and Mitigants

Table 3: Summary of Risks and Mitigating Measures

Risk Description	Assessment (H/M/L)	Mitigation Measures
Program/Project Preparation Risks		
Technical designs		
▪ Lack of quality assurance for metro technical specifications.	L	▪ AIIB have been actively involved with TTC in the preparation of the technical specifications, ensuring they meet the required quality standards. ▪ A senior rolling stock technical consultant was engaged by AIIB during the preparation phase and will continue to support TTC during the tendering process and early implementation.
Program/Project Implementation Risks		
Implementation capacity		
▪ TTC and City Municipality lack of knowledge of AIIB policies and procedures. ▪ Lack of coordination between TTC, City Municipality and MoF.	M	▪ AIIB will provide continuous training to the PIU on the aspects relevant to the Project. ▪ The POM, condition for effectiveness, will outline the role of, and coordination between, TTC, City Municipality and MoF.
Financial management		
▪ TTC has limited experience in managing the FM responsibilities of an MDB-financed operation. ▪ The accounting system "Superfin" does not include module for contract administration and reporting. Therefore, there is a need to supplement with excel which may be prone to error. ▪ The absence of an internal	M	▪ Continuous training and support from AIIB. ▪ TTC aims to acquire an SAP ERP system that is more comprehensive and incorporates stronger controls for financial reporting. ▪ Established internal controls such as

Risk Description	Assessment (H/M/L)	Mitigation Measures
audit function in the Project arrangements diminishes the robustness of the internal control environment. ▪ Insufficient funds for TTC to finance O&M related cost.		segregation of duties, proper review and authorization of transaction, and oversight of City Municipality on the utilization of Project funds. ▪ The supplier will cover the O&M costs of the provided rolling stock for the first three years of operation. Additionally, City Municipality provides budgetary support to ensure the continuous operation of TTC services.
Procurement		
▪ TTC's limited experience with AIIB-financed procurement. ▪ For large procurement contract over USD200 million, unclear documents may cause clarifications and complaints, leading to delays.	M	▪ Ongoing training and support from AIIB; ▪ One procurement and one technical consultant have been engaged to help prepare documents and enhance TTC's capacity; ▪ Early market engagement has been conducted by TTC to assess suppliers' capabilities and technology advancements for suitable technical specifications and procurement documentation.
ES risks and impacts during construction and operation		
▪ Management of waste (including hazardous materials) and health and safety issues during the metro cars decommissioning phase of the Project.	M	▪ Specific Decommissioning Phase ESMP will be prepared by TTC before the start of this phase. ▪ Training will be provided to staff to manage waste and associated OHS risks.

Annex 1: Results Monitoring Framework

Project Objective (PO):	To enhance the efficiency, reliability, safety and sustainability of the Tbilisi Metro system through the procurement of new rolling stock.									
Indicator Name	**Unit of measure**	**Base-line Data 2024**	**Cumulative Target Values**					**End Target 2030**	**Data source / Methodology**	**Responsibility**
			2025	**2026**	**2027**	**2028**	**2029**			
1.Average daily ridership	pax/day	430,000	450,000	470,000	490,000	510,000	530,000	550,000	TTC ridership projection	TTC
2.Metro cars' corrective repairs per year.	number	350	350	340	300	280	270	260	CM 1 - after 960 000 km of driving on line. (20 person is required to service each train) CM 2 – after 2 880 000 km of driving on line (20 person is required to service each train.)	TTC
3.Maximum level of noise inside the train cars.	decibel	83	83	73	73	73	73	73	Measurements will be taken on the new cars based on the contract technical specifications.	TTC
4. Maximum level of vibration inside the metro driver cabin.	decibel	122	84	84	84	84	84	84	Measurements will be taken on the new cars based on the contract technical specifications. Unit of measure is dB, following local regulations.	TTC
5.Average annual energy consumption per train.	kWh/year	1,870,800	-	-	-	-	-	1,740,000	Measurements will be taken on the	TTC

Project Objective (PO):	To enhance the efficiency, reliability, safety and sustainability of the Tbilisi Metro system through the procurement of new rolling stock.									
Indicator Name	**Unit of measure**	**Base-line Data 2024**	**Cumulative Target Values**					**End Target 2030**	**Data source / Methodology**	**Responsibility**
			2025	**2026**	**2027**	**2028**	**2029**			
									new trains based on accounting system of electric energy consumption and regeneration.	
6.Annual GHG emissions reduction.	Ton	0	4,500	5,500	6,500	7,500	8,500	9,500	Emission factor assumption[5]: 200gCO2 per passenger-km for cars, 80gCO2 for buses and 30gCO2 for metros.	TTC
Intermediate Results Indicators: *(To measure key intermediate results under each component that are necessary for showing progress toward achieving PO. They can capture outputs or short-term outcomes.)*										
1. Metro cars with energy regeneration systems delivered (cumulative)	number	0	8	36	52	67	82	97	As per rolling stock expected delivery.	TTC
2. Training of female staff under the Project.	percentage	0	5	10	15	20	25	30	Measurement will be taken based on the total number of male and female staff trained in a year during the implementation of capacity building and Institutional Strengthening component.	TTC

[5] The methodology is aligned with the CBA approach.

Annex 2: Detailed Project Description

A. Tbilisi Metro Overview

1. **Tbilisi Urban Transport.** The built-up areas of Tbilisi City stretch approximately 35km from north to south along the Mtkvari (Kura) river. Due to the city's topographical characteristics, the width of these built-up areas is generally narrow, leading to traffic congestion along the narrow sections near the Mtkvari river. Tbilisi City operates various public transport modes, including the metro, buses, minibuses, and cable cars. According to a household survey conducted in 2016[6], public transport accounted for a market share of 39 percent, while private cars had a share of 30 percent. The remaining share is attributed to non-motorized transport.

2. **Tbilisi Metro.** The metro system in Tbilisi serves as the vital backbone of the city's urban transportation network. It was first opened in 1966, operating between Didube and Rustaveli (6.3 km with 6 stations), followed by multiple extensions. In 1979, the second line was introduced and has also been expanded over time. Currently, the Tbilisi metro system covers a total distance of 27.3 km and consists of 23 stations across two lines. The first line, officially named the "Akhmeteli–Varketili" line, spans 19.6 km and serves 16 stations. The second line, known as the "Saburtalo Line," stretching over 7.7 km, connects 7 stations and has recently been extended to State University.

3. **Metro Ridership.** Tbilisi metro ridership has experienced a high rate of growth over the past decade, with an average annual increase of 6.4 percent. From 2010 to 2019, the number of passengers per year rose from 78.9 million to 137.7 million. Despite the significant impact on metro ridership between 2020 and 2021 the COVID-19 pandemic which caused a sharp decline, ridership quickly rebounded to pre-pandemic levels in 2022. In 2023, the total number of passengers reached 159.5 million, with an average of 437,012 daily passengers. Based on TTC's estimation, the Project Team has conducted additional forecasting of Tbilisi metro ridership to evaluate the growth trend and demand. Detailed information regarding these forecasts can be found in Annex 3 Demand Analysis.

4. **Rolling Stock Review.** The service life of existing rolling stock is 35 years. Due to budgetary constraints, TTC had to extend the service life of existing rolling stock beyond their original service life by performing Capital Repair and Medium Repair which has allowed for an extended service life of 50 years. For instance, Ем-3M and с-508ТМ underwent capital repair in 2005-2008 and medium repair in 2015-2018, respectively. However, these cars will reach the end of their service life in 2024-2027, and further extension is not feasible. The procurement of new rolling stock is therefore necessary, and the Project has been designed and prepared accordingly. Table 1 below shows the types of rolling stock owned by TTC, the number of cars, the year of manufacture, and the year of Capital Repair and Medium Repair.

[6] This 2016 household survey is the most recent and preparations for the next one are currently underway (2024 household survey).

Table 1. The Types of Rolling Stock Owned by TTC

Model	Quantity	Production Data	Data of Capital Repair and Modernization	Data of Medium Repair, with Modernization	Final Expiry Date
Ем-3М	26	1974-1977	2005-2008	2015-2018	2024-2027
Ем-508ТМ	26	1974-1977	2005-2008	2015-2018	2024-2027
81-717М	60	1986-1992	2008-2018	2018-2028	2028-2038
81-714М	51	1986-1992	2008-2018	2018-2028	2028-2038
81-714М	2	1986-1992	2018-2019	2028-2029	2038-2039
Ема 81-502	8	1979	2018-2019	2028-2029	2038-2039
Ема 81-502	19	1979	2018-2019	2028-2029	2038-2039
Total:	**192**				

B. Project Components Summary

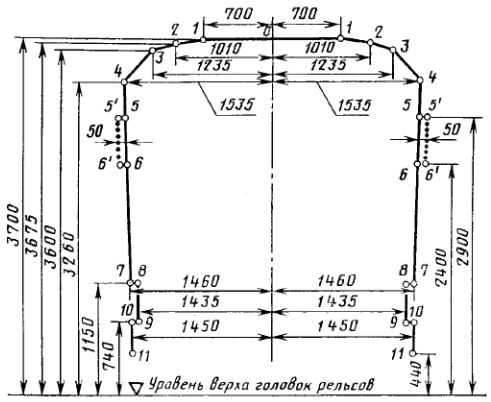
Component A. Rolling Stock Acquisition.	
A.1) Rolling stock acquisition (*USD230m, AIIB USD135m*)	i. Procurement of 97 new electric metro cars, with a total cost of USD230 million (AIIB financing USD135 million). ii. This subcomponent also includes funding for a driving cab simulator for TTC staff training.
A.2) Supervision Consultant *(USD2.7m, 100% by AIIB)*	i. Engagement of a supervision consultant to oversee the manufacturing, delivery, and commissioning of the new rolling stock, ensuring compliance with technical specifications and quality standards. ii. The consultant is expected to provide ongoing support and expert advice throughout the procurement process and initial operation phases.
Component B. Capacity Building and Institutional Strengthening *(USD0.5m, 100% by AIIB)*	
This component will: i. provide support to the PIU through the hiring of consultants to strengthen institutional capacity for project management, procurement, monitoring, FM and ES activities; ii. finance strategic training programs for TTC staff, focusing on key technical aspects related to O&M of modern metro systems; and iii. a cybersecurity assessment for TTC that is consistent with Georgia's progress on the same topic.	
Component C. Feasibility and Preliminary Designs for Depots and Tunnel Rehabilitation *(USD1.85m, 100% by AIIB)*	
i. Engagement of a consultancy firm to conduct feasibility studies and develop preliminary designs for the rehabilitation of depots and a tunnel as part of the broader metro modernization scope. ii. The consultancy services will be procured following AIIB's procurement processes. iii. Work will be carried out during Project implementation phase to ensure that the designs meet the required standards. iv. The rehabilitation works are expected to begin in the next three to five years.	

C. Technical Specification Summary.

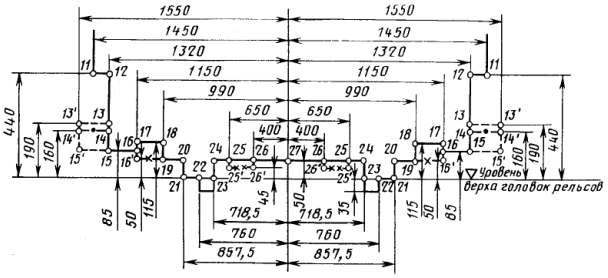
5. **Rolling Stock Specifications.** The new metro trainsets are designed to have a minimum service life of 45 years or a minimum of 4.5 million kilometers without fatigue damage or unacceptable settlings. The metro trainsets will consist of either 4 or 5 cars, each with 2 bogies. These trains will be bi-directional, with doors on both sides and identical driver's cabs at each end. The design stage will consider the technical aspects of extending the 4-car composition and adding an intermediate car for the 5-car configuration. Both the 4-car and 5-car configurations will aim to provide similar solutions in terms of car design, appearance, and driving. Additionally, all trainsets will be equipped with inter-carriage open gangways to facilitate easy passenger movement between cars.

Figure 1. Clearance of the Metro Cars

Top Clearance Main Outline



Bottom Clearance Main Outline



6. **Platform Length**. The platform length is set at 100 meters. The metro rolling stock will have specific external dimensions: each metro car will be between 19.5 and 20.5 meters in length, including coupling devices. A 5-car metro trainset, including coupling devices, will have a maximum length of 92.5 to 97.5 meters. For a 4-car trainset, with a length of approximately 79 meters, there is provision for future expansion by adding an extra car, resulting in a total maximum length of 92.5 to 97.5 meters in a 5-car configuration, including coupling devices.

7. **Trainset Capacity**. Passenger capacity of the trainset shall be as follows:

Capacity of Each Car	**Driving End Car**	**Intermediate Car**
Maximum Passengers	255 - 270	265 - 280
Number of Seats	36 - 42	36 - 48

8. **Accessibility Design**. The metro train design will cater to the needs of all passengers, including children, passengers with luggage, senior citizens, and persons with disabilities, including those with restricted mobility and using wheelchairs. The horizontal gap between the metro car entrances and the station platform edge will be designed limited to a range of 10 to 12 cm, considering that all stations are in a straight line.

9. **Driving Cab Simulator**. TTC expects that all metro train drivers, traffic controllers, and operators will undergo standardized training, assessment, and maintenance on a regular basis. This training can be conducted using real equipment and track lines or through synthetic training media that simulate the metro trainset and its subsystems, following current operation rules.

10. The use of driving cab simulator enhances the quality of driver training, reduces training time, and ensures a consistently high level of proficiency in the long term. The main objectives of the driving cab simulators include accurate simulation of the metro train and safety systems, training on vehicle operation and handling of onboard equipment, route familiarization, fault finding and maintenance training, testing driver competence and knowledge of rules, achieving uniformity in driver behavior, certification and licensing of drivers, and increasing training efficiency and profitability.

Annex 3: Economic and Financial Analysis

1. **Overview.** A cost-benefit analysis (CBA) was carried out to assess the economic viability of the Project comparing "with-" and "without-project" scenarios, based on data provided by the Pre-Feasibility Study (PFS) for Tbilisi Metro Upgrade prepared by Systra, TTC Metro Department, and technical due diligence inputs. The Project is expected to i) reduce travel times for current metro users, compared with the "without-project" scenario, and ii) shift passenger traffic from other modes to metro, thereby generating substantial economic and environmental benefits. The Project's key benefits include value of time savings (VOT) of passengers, vehicle operating costs (VOC) savings, and reduction in greenhouse gas (GHG) emissions.

2. The Project exhibits a Base Case Economic Internal Rate of Return (EIRR) of 42 percent, with an Economic Net Present Value (ENPV) of USD739 million (discounted at 9 percent p.a. to 2054). The Project is therefore considered economically feasible.

3. The EIRR is considerably high due to the large impact that the decommissioning of the existing fleet would have on metro operations. Under the assumption that headway times[7] would double in the "without-project" scenario (from 4.5 minutes to 9 minutes), this would cause metro passengers to increase travel times and to shift to road-based modes (mainly buses), thus contributing to congestion and increasing GHG emissions.

4. **Methodology.** The EIRR and ENPV were calculated based on a discounted cashflow analysis by comparing the Project's economic and societal benefits with the Project's cost over 30 years[8]. A Sensitivity Analysis was performed taking into consideration variations in the Project's expected benefits and costs. Key assumptions include:

- All costs and prices are expressed in USD in 2024 prices.
- The economic cost of the Project is estimated at USD217.7 million, excluding taxes and duties.
- The evaluation covers 30 years of Project economic life from 2025 to 2054, including 6 years of rolling stock acquisition and replacement per delivery schedule (2025 – 2030) and 30 years of operation (2025 - 2054).
- Social Discount Rate (SDR) is assumed at 9 percent.

5. **Demand Analysis.** As a stylized fact, economic growth drives increased production, consumption, urbanization, and mobility, which directly translates into a higher demand for transport services across various modes and sectors. Over the past 15 years, Georgia's real GDP has been growing at a 4.85 percent CAGR, almost in proportion with transport and metro ridership (4.8 percent CAGR). According to the International Monetary Fund, the expected Georgia's GDP growth between 2024 to 2029 is 5.4 percent per annum on average.

6. The demand forecast was estimated based on a log-log regression model, calibrated on the trend of the past 15 years with actual data provided by TTC. The model specification included real GDP as explanatory variable, with a dummy variable to control the impact of

[7] Headway times refer to the interval or gap between two consecutive trains. Data provided by TTC.
[8] The time horizon of 30 years was chosen in line with international best practices. See *Guide to Cost-Benefit Analysis for Investment Projects*. European Commission, 2014

Covid-19 on mobility. The elasticity of the use of the metro to GDP per capita growth was estimated at 0.95[9]. Elasticity is expected to reduce in line with economic growth[10]. An exponential decay function was set to gradually reduce transport demand elasticity to 0.50 over the evaluation period.

7. Demand forecast also included distribution of new passengers between without-project and with-project scenarios. Due to the metro service degradation in the "without-project" scenario, some passengers will prefer travelling by other modes or not travelling. Based on the PFS, we assume that 63 percent of passengers will be diverted to buses and 37 percent of passengers will be diverted to cars. Metro capacity in the "with-project" scenario was estimated to be sufficient to absorb demand increase in Project scenario, although more detailed studies would be needed in the medium term to confirm this assumption. The table below shows the demand forecast of the Project.

Table 2. Annual metro ridership forecast.

Year	2023	2030	2040	2050
Annual passengers (millions)	159.5	201.8	259.3	305.9
Daily passengers	437,012	552,912	710,539	838,148

8. **Economic Costs**. The economic costs of the Project include the capital cost of rolling stock and the operation and maintenance (O&M) costs of the metro system. Standard conversion factors (SCF) of 0.93[11] and 0.9 have been used to convert capital and O&M financial costs into economic prices respectively.

- **Capital Expenditure**. According to the latest estimation provided by TTC, the financial capital investment for acquiring the 97 metro cars (including one simulator and various needed consumables and services) is estimated at USD226.7 million. The final economic cost was derived as USD217.7 million after converting the financial cost to economic cost. The rolling stock delivery schedule has been taken into account into the economic analysis.
- **O&M**. O&M costs include staff wages, energy, metro repair and maintenance costs. O&M costs under various categories have been estimated as per the costs incurred in the current metro operation in Tbilisi; unit costs may marginally decrease after the rolling stock renewal, but this effect was not considered.
- **Salvage value**. Salvage value is estimated by assuming a 2.5 percent depreciation rate of metro cars over a 40-year life span and is treated as a residual benefit at the end of analysis period.

9. **Economic Benefits.** The Project is expected to generate substantial economic benefits. The key quantifiable benefits include i) VOT savings of existing metro passengers and passengers switching from other modes to metro, ii) VOC savings, and iii) reduced GHG emissions.

- **VOT Savings**. This benefit will mainly arise from (i) time savings for modal shift passengers compared to the 'without project' scenario, and (ii) time savings for existing

[9] All coefficients were statistically significant, with *Adjusted* R^2 of 0.95.
[10] See *ITF Transport Outlook.* OECD, 2021.
[11] Based on the PFS for Tbilisi Metro Upgrade prepared by Systra.

metro passengers due to shorter headway times compared to the 'without project' scenario. Average household income and hourly earnings were used to estimate the unit VOT[12] for working and non-working passengers[13]. VOT was assumed to grow by 1.0 percent per annum to reflect labor productivity increases[14]. For the existing metro users, the time saved per trip per passenger was estimated at 4.5 minutes compared to the “without-project” scenario, based solely upon the increased frequency of metro services in the “with-project” scenario due to the replacement of rolling stock. Frequency is expected to decrease in the "without-project" scenario proportionally with the reduction of rolling stock (50 percent) if the project is not implemented. Therefore, the "without-project" scenario assumes that headway times will double from 4.5 minutes to 9 minutes. Changes in metro speed were considered to be negligible in the scenario comparison. For the existing metro users, the time saved per trip per passenger was estimated by comparing to the “without-project” scenario. Frequency of metro is expected to decrease in the "without-project" scenario proportionally with the reduction of rolling stock (50 percent), and therefore the headway times was assumed to double from 4.5 minutes to 9 minutes.

- To calculate time savings for modal shift passengers, occupancy factors for road-based modes and average trip length (5.5km) were estimated by AIIB team, and average travel times were compared among different modes by selecting origin-destination pairs in Tbilisi along the metro line. Modal shift was calculated by considering the relative travel times by mode. Users are expected to shift when relative travel times increase. Road-based modes travel times are expected to increase in time in line with transport demand, assuming an elasticity of travel times to travel demand at 0.5 percent, thus providing a clear incentive to shift to metro services.
- **VOC Savings**. This benefit will primarily arise from savings in maintenance costs for cars and buses due to the passenger modal shift towards the metro. The mode-wise VOC data for cars and buses was obtained primarily from the PFS.
- **GHG Emission Savings**. As a result of fewer cars and buses on the road due to modal shift towards metro, and an increase in speed of the remaining vehicles resulting from lower congestion on road, the Project will significantly reduce GHG emissions. An emission factor of 200gCO2 per passenger-km for cars, 80gCO2 for buses and 30gCO2 for metros was adopted for the assessment[15], based on international standard values. For carbon shadow price, the midpoint of the AIIB Guidance Note on Cost-Benefit Analysis recommendation was used, which is USD67 per ton equivalent in 2025 increasing to USD127 per ton equivalent in 2054.

10. Apart from the aforementioned primary benefits, the Project would also generate additional economic benefits resulting from various external factors. These include savings derived from enhanced road safety, reduced local pollution, and cost savings in road maintenance. If these benefits are fully accounted for, the Project's EIRR would increase from

[12] VOT was estimated at USD4.64 per hour. Country-level values were used; however, incomes in Tbilisi are higher than the national average.
[13] Adjustment factors were applied to reflect the different purpose of trips i.e., business, leisure, based on World Bank guidelines.
[14] Based on AIIB Economics Department’s recommended methodology.
[15] A reduction in metro energy consumption of 17 percent was assumed for the ”with-project” scenario.

42 percent to 47 percent[16]. This further confirms the urgency, significance, and high cost-effectiveness nature of the Project.

11. **Results and Sensitivity Analysis**. Based on the above costs and benefits calculation, the Base Case EIRR is computed as 42 percent while the NPV is estimated at USD739 million. Although the AIIB Team has relied on rather conservative assumptions, the EIRR is considerably high due to the large impact that the decommissioning of the existing fleet (almost 50 percent of total fleet) would have on metro operations, together with relatively low investment costs to undertake the project. Under the assumption that headway times would double in the "without-project" scenario, this would cause metro passengers to increase travel times and to shift to road-based modes (mainly buses), thus contributing to congestion and increasing GHG emissions.

12. A sensitivity analysis was carried out with the following scenarios: (i) a 25 percent increase in costs; (ii) a 25 percent decrease in benefits; (iii) a 25 percent reduction in ridership, and (iv) a combinedly 25 percent increase in cost and 25 percent decrease in benefits. In all scenarios, the EIRRs are well above the social discount rate of 9 percent, indicating that the Project remains viable even under these adverse conditions.

Table 3. Sensitivity Analysis (values in USD millions).

Scenario	EIRR	ENPV
Baseline	42%	739
25% increase in costs	32%	659
25% decrease in benefits	29%	476
Combination of 25% costs and 25% decrease in benefits	22%	396

Table 4. Project Economic Cash Flow

Year	Capex	O&M	Total Costs (1)	VOT Savings	VOC Savings	GHG emission Savings	Total Benefits (2)	Residual Value (3)	Net Cash Flow (2) - (1) + (3)	Discounted Cash Flow (9%)
2025	19.0	1.3	20.3	4.8	0.0	0.3	5.1		(15.2)	(15.2)
2026	62.7	6.0	68.7	23.2	1.0	0.4	24.6		(44.1)	(40.4)
2027	35.8	8.7	44.5	35.6	1.8	0.5	37.9		(6.6)	(5.5)
2028	33.2	11.2	44.4	48.7	2.9	0.6	52.2		7.9	6.1
2029	33.2	13.7	46.9	63.3	4.1	0.7	68.0		21.2	15.0
2030	33.2	16.2	49.4	78.7	5.2	0.8	84.8		35.4	23.0
2031		16.2	16.2	82.6	6.5	1.0	90.0		73.9	44.0
2032		16.2	16.2	86.5	7.8	1.1	95.4		79.2	43.3
2033		16.2	16.2	90.4	9.2	1.3	100.9		84.7	42.5
2034		16.2	16.2	94.5	10.6	1.4	106.5		90.3	41.6
2035		16.2	16.2	98.6	12.0	1.6	112.2		96.1	40.6
2036		16.2	16.2	102.9	13.5	1.8	118.1		102.0	39.5
2037		16.2	16.2	107.3	15.0	2.0	124.2		108.0	38.4

[16] Data points for mode-wise savings on road maintenance per km, mode-wise savings from local pollution, and savings from accident per passenger-km obtained from the PFS.

Year	Capex	O&M	Total Costs (1)	VOT Savings	VOC Savings	GHG emission Savings	Total Benefits (2)	Residual Value (3)	Net Cash Flow (2) - (1) + (3)	Discounted Cash Flow (9%)
2038		16.2	16.2	111.8	16.5	2.2	130.4		114.3	37.3
2039		16.2	16.2	116.4	18.1	2.4	136.9		120.7	36.1
2040		16.2	16.2	120.5	19.5	2.6	142.6		126.5	34.7
2041		16.2	16.2	124.6	21.1	2.8	148.5		132.4	33.3
2042		16.2	16.2	128.7	22.3	3.0	154.1		137.9	31.9
2043		16.2	16.2	132.9	23.6	3.3	159.7		143.5	30.4
2044		16.2	16.2	137.1	24.9	3.5	165.5		149.3	29.0
2045		16.2	16.2	141.5	26.2	3.7	171.4		155.2	27.7
2046		16.2	16.2	146.0	27.5	4.0	177.4		161.3	26.4
2047		16.2	16.2	150.6	28.9	4.2	183.7		167.5	25.2
2048		16.2	16.2	155.3	30.3	4.5	190.0		173.9	24.0
2049		16.2	16.2	160.1	31.7	4.8	196.6		180.4	22.8
2050		16.2	16.2	165.1	33.1	5.1	203.3		187.1	21.7
2051		16.2	16.2	170.2	34.6	5.4	210.2		194.0	20.6
2052		16.2	16.2	175.4	36.1	5.8	217.3		201.1	19.6
2053		16.2	16.2	180.8	37.6	6.1	224.5		208.4	18.7
2054		16.2	16.2	186.3	39.2	6.5	232.0	111.0	326.8	26.9
Total (in PV)	**177.4**	**144.9**	**322.3**	**914.3**	**120.0**	**18.1**	**1,052.4**	**9.1**	**3,513.0**	**739.2**

Annex 4: Sovereign Credit Fact Sheet - Georgia

1. **Background**. Georgia is an upper-middle-income country with GDP per capita at USD8,880 (around USD27,400 in purchasing power parity), and a population of 3.7 million in 2024. Georgia's strategic geographic position along the Middle Corridor plays a crucial role in connecting trade and energy supply between the Caucasus region and Europe. Potential growth is hindered by several factors, including an aging population and outward migration (especially among the youth), low educational attainment. Infrastructure bottlenecks in transport and energy hinder growth across various sectors, result in high transport and logistics costs, which inhibit trade. The authorities are committed to addressing these challenges by allocating around 8 percent of the annual GDP to capital investments.

2. From 2003 to 2023, growth averaged 5.9 percent, primarily driven by investment. Compared with peers, Georgia has a still high share of employment in agriculture, a sector marked by low productivity. Unemployment remains elevated and is largely structural, with many people lacking prior work experience or required educational attainment. A significant portion of the unemployed have been out of work for over four years.

Key Economic Indicators	2020	2021	2022	2023	2024*	2025*	2026*	2027*
Real GDP growth 1/	-6.3	10.6	11.0	7.5	7.6	6.0	5.0	5.0
Inflation (avg., in percent) 1/	5.2	9.6	11.9	2.5	1.1	26	3.0	3.0
Fiscal balance 2/	-9.3	-6.0	-3.1	-2.5	-2.5	-2.3	-2.3	-2.3
Public debt	59.6	49.1	39.2	39.2	38.2	37.4	37.2	36.4
Gross public financing needs	14.3	13.3	7.4	5.6	5.7	5.1	5.6	5.3
Current account balance	-12.4	-10.3	-4.5	-4.3	-5.8	-5.9	-5.8	-5.8
External debt	109.4	98.7	81.0	70.2	66.7	62.8	58.5	55.6
FX reserves (USD billion)	3.9	4.4	4.9	5.0	5.0	5.4	5.6	6.3
Exchange rate, GEL/USD 3/	3.3	3.1	2.7	2.7	2.7	..	..	..

Source: IMF WEO October 2024; IMF Country Report No. 24/135 May 2024; in percent of GDP, unless indicated otherwise
Notes: 1/ percent change, year-on-year. 2/ Augmented deficit (IMF program definition) 3/ end-of-period, most recent data from central bank; as of October 10

3. **Recent Developments**. After a pandemic-related contraction in 2020, the economy bounced back in 2021. A recovery in tourism since 2021, along with a surge in immigration, financial inflows, and transit trade driven by sanctions on Russia, have fueled GDP growth (around 11 percent in 2022), leading to lower unemployment and poverty. There was also a strong increase in FX reserves and in fiscal revenues, which contributed to a lower fiscal deficit (around 3.0 percent in 2022). Finally, the currency strengthened, resulting in a sharp reduction in inflation and public debt. Georgia's IMF program was suspended in September 2023 due to concerns over the central bank's independence and its sanctions enforcement. Credit agencies assess the fiscal impact of this suspension to be limited.

4. In December 2023 Georgia received EU candidate status, paving the way for membership negotiations. The EU has identified nine priority areas including progress with a systemic approach to "de-oligarchization". In May of this year, the Law on Transparency of Foreign Influence was passed, mandating that all organizations receiving more than 20 percent of their funding from abroad to register as agents of foreign influence. This has led to investor concerns that the law could jeopardize Georgia's prospects for closer integration with the EU.

5. Georgia's gross international reserves are slightly below the IMF-recommended minimum threshold (at 95 percent of the adequacy metrics), but once the sizable FX holdings by commercial banks are included, the coverage improves to 115 percent—still lower than the authorities' desired range of 120-130 percent. Georgia's banking sector is stable with solid capitalization and high profitability. However, dollarization in deposits and lending remains relatively high, standing at 50 percent and 44 percent respectively. Macroprudential measures have been introduced aimed at gradually reducing the level of FX lending, but achieving this will take time.[17]

6. **Outlook and risks.** Growth has moderated but remains high (7.6 percent projected for 2024). Growth is expected to remain close to potential (5 percent) in the medium term supported by investments in infrastructure and continued strong private consumption. Inflation has come down strongly driven by an appreciation of the currency, lower commodity prices, and tight monetary policy. With unemployment levels at historic lows (15.3 percent in 2023) and upward pressure on wages (16.5 percent nominal growth in 2023), inflation is expected to remain below the central bank target (3 percent) in the medium term. After a strong decrease in 2022, the current account deficit is expected to increase in 2024 (and reach 5.8 percent) due to normalization of remittances and the current account deficit is expected to stabilize around 5.5 percent in the medium term.

7. Negative spillovers from geopolitical tensions, since 2022, have not materialized, but geopolitical issues continue to create challenges and risks for the economy. No major changes to economic policy are expected to arise from the elections in October 2024.

8. Public debt in Georgia is sustainable and projected to remain below the 60 percent debt ceiling. However, a moderately high ratio of short-term and maturing debt relative to foreign exchange reserves, combined with a high share of external debt (73 percent of total debt), makes public debt vulnerable to currency fluctuations. The IMF advises maintaining the debt ratio below 40 percent to avoid breaching the debt ceiling in the event of adverse shocks. At the same time, Georgia's public debt has a favorable structure, with mostly concessional terms, leading to low interest expenses of 4-5 percent of government revenues—roughly half that of peer countries.[18]

9. In April 2024, Moody's affirmed its Ba2 rating and changed its outlook from negative to stable, reflecting the resilience of the Georgian economy. In January 2023, Fitch affirmed its rating of BB and changed its outlook from stable to positive but changed the outlook back to stable in June 2024. Similarly, in August 2024, S&P Global affirmed its rating of BB with a stable outlook.

[17] Fitch Affirms Georgia at 'BB'; Outlook Positive (fitchratings.com)
[18] Government of Georgia – Ba2 stable | Credit Opinion | Moody's (moodys.com)