Sustainable Transport Policy for Georgia: A Roadmap

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Abstract

Purpose

The International Energy Agency (IEA) developed this Sustainable Transport Policy for Georgia roadmap under the European Union-funded five-year EU4Energy programme, which supports evidence-based energy policy and data capabilities in Eastern Partnership countries, including Georgia.

The roadmap supports sustainable transport planning at national and city levels, summarising legislation, planning documents, and research on passenger and freight transport. Key metrics include accessibility, safety, convenience, equity, energy efficiency, emissions reduction, congestion and service reliability. Policies and targets are proposed to help Georgia meet the United Nations' Sustainable Development Goals and achieve its Nationally Determined Contribution (NDC) pledges.

The government of Georgia is encouraged to integrate these recommendations into legislation and planning. While transport covers many fuels and technologies, this roadmap focuses primarily on reducing emissions and energy use in road transport while improving accessibility, performance and safety. It also provides guidance for non-governmental organisations (NGOs), development financiers and the private sector.

Structure

This roadmap begins with an outline of Georgia's institutional and policy framework, followed by the broader context, highlighting transport's role in the economy and its environmental impacts. It reviews transport's effects on people's lives, including both benefits (access to goods and services) and drawbacks (congestion, air and climate pollution, and road injuries and deaths).

Since national and municipal policies shape transport technology, infrastructure and operations, the report first examines the country as a whole, followed by Georgia's largest cities. With road vehicles responsible for more than 98% of domestic transport energy use and carbon dioxide (CO_2) emissions, the focus is on road transport.

Opportunities identified include improving vehicle efficiency – particularly by accelerating electric vehicle (EV) adoption – and cutting reliance on inefficient vehicles by reducing unnecessary car travel and shifting to buses, metro, walking

and cycling, as well as intercity passenger and freight rail. These opportunities are presented as a coordinated and sequenced portfolio of policies designed to enhance transport efficiency and effectiveness while advancing road transport electrification.

Acknowledgements, contributors and credits

This study was written and produced by Jacob Teter (Consultant, University of California, Davis – European Transport Energy Research Centre), and directed by Talya Vatman, Caspian & Black Sea Programme Manager.

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Table of contents

Executive summary 8
Transport in Georgia: Taking stock 15
Status and key developments 16
Freight and regional connectivity 20
Car ownership and trade 25
Energy and emissions 27
Renewables 32
Challenges for transport 34
National framework 43
National government institutions 44
Other stakeholders 47
Policies and plans 52
City-level framework 60
Institutions and stakeholders 61
Tbilisi 62
Batumi 73
Kutaisi 76
Other cities 77
Sustainable transport roadmap 78
Policy themes 81
Opportunities 85
Roadmap 88
Abbreviations and acronyms 125
Glossary 126

Executive summary

Georgia is at a pivotal point in shaping sustainable transport policy. This roadmap guides policy makers in making transport cleaner, fairer and more efficient while building on Georgia's strengths – its location, institutions, competitive wages, low-emissions electricity and natural resources. Key opportunities include assembling and producing electric vehicles; manufacturing cells and battery components for mobility and storage; strengthening regional freight links; and developing low-emissions fuels.

Road transport has become cleaner and more efficient, but progress needs to accelerate. Car ownership and freight activity have risen along with incomes, but this comes at a cost: Nearly all of Georgia's transport fuel is imported, exposing the country to price and security risks. Air quality ranks 62nd of 134 countries, with pollution causing about 130 premature deaths per 100 000 people – almost triple the global average. Road fatalities totalled 442 in 2022, more than twice the rate in the European Union, while 230 deaths each year can be linked to road-related air pollution.

Public concern is mounting over the impact of a growing vehicle fleet. Civil society groups note that expanding roads in Tbilisi has worsened congestion and increased local air pollution. Awareness of these effects has shifted public opinion in favour of reducing car dependence and investing in public transport, walking and cycling networks, and people-focused street design.

Policy makers must act at the national and local levels, prioritising efficiency, electrification of road vehicles and greater use of alternative modes. Recommendations to cut emissions, boost efficiency and improve access to other transport options are grouped into short-term (through 2030), medium-term (by 2035), and long-term (2040s and beyond), focusing on clean vehicles and multimodal measures at local and national levels.

High-priority actions for sustainable transport at the national level

High priority actions at the national level

Short-term (by 2030)	Medium-term (by 2035)	Long-term (2040 and beyond)
Clean vehicles		
• Index gasoline and diesel taxes to inflation • Adopt Euro 6/VI standards and technical inspections on imports • Adopt and enforce more stringent in-use vehicle laws (e.g. emissions, speed limits) • Adjust vehicle import duties to more directly reflect vehicle fuel consumption performance • Develop EV and charging targets and deployment plans • Increase enforcement of in-use vehicle operations • Improve data collection, validation and reporting of in-use vehicle fleet	• Design and implement supply-side regulations (e.g. fuel consumption standards or EV sales requirements) • Increase taxes on fossil-based transport fuels, use revenues to finance transport infrastructure, public / non-motorised transport, and charging infrastructure • Consider fleet renewal incentives (e.g. targeted subsidies for EV purchases) • Phase out import tax exemptions for hybrids, PHEVs and EVs; phase in exemptions for zero-emission trucks • Develop EV battery collection and export/recycling capacity	• Mandate phase-out of ICE vehicle sales, then in-use fleet, starting with cars and buses • Enable energy aggregators to use EVs for energy arbitrage (V2G as mobile energy storage) • Develop incentives for circular and low-carbon EV batteries and materials (e.g. steel, aluminium) • As the vehicle fleet electrifies, transition from fuel taxes to road use charges (e.g. distance-based pricing or congestion charges) • Promote due diligence in EV battery supply
Multimodal		
• Boost multimodal cargo handling capacity by investing in port expansion projects (e.g. at Anaklia and Poti), and multimodal hubs, especially along the Middle Corridor • Implement rail reforms to meet EU accession requirements • Identify and develop strategic rail projects, e.g. freight hubs and high-speed passenger corridors • Adopt weigh stations and road tolls for trucks on highways • Survey best practices for truck electrification	• Adopt road tolls for cars on major highways • Transition economically unviable and low frequency rail operations to electric buses and trucks • Increase and differentiate road tolls to reflect infrastructure upkeep and environmental costs (including exemptions for electric vehicles, to be phased out as their fleet shares grow) • Earmark public revenues (e.g. from road tolls) to subsidise passenger rail fares and support railway maintenance and improvements	• Develop a holistic plan to fund infrastructure based on social costs and benefits that transitions from fuel taxes to distance-based and/or congestion pricing • Target subsidies for rail and bus to low-income segments, while ensuring that public transport competes on quality, comfort and speed

Georgia is well-positioned to reap the economic and environmental benefits of EVs. EVs are the most effective option for cutting road transport emissions, with rapid improvements in cost and performance driven by global battery innovation. Imports of affordable Chinese-made EVs are growing, but their high upfront costs remain a barrier. Given limited public budgets and household purchasing power, policies must prioritise the most economically viable use cases

and ensure broad access to electrification. Sustaining momentum will require further differentiation of vehicle import duties, indexing fuel taxes to inflation, and mobilising low-cost international finance to support adoption.

The transition to electric mobility will be gradual, requiring a framework that balances fiscal sustainability, economic viability and social equity. The achievements of the past decade already provide a foundation for reform. Existing vehicle import duties should be modified to reflect differences in fuel efficiency and emissions, alongside stricter monitoring and enforcement of in-use vehicles. Circulation and fuel taxes should also be more closely aligned with national economic and environmental objectives, while targeted incentives for EVs and charging infrastructure will be essential to ensure Georgia benefits from the global shift to clean mobility.

Investments in diverse transport infrastructure can make Georgia's cities more liveable and freight more efficient. Funding from institutions such as the World Bank, the Asian Development Bank (ADB), and the European Bank for Reconstruction and Development (EBRD) has been critical for upgrades to road infrastructure as well as the modernisation, extension and electrification of rail networks. It has also provided crucial financing for initiatives like Tbilisi's Sustainable Urban Mobility Plan. In addition to financing and grants, international institutions – including the European Union, the United Nations Economic Commission for Europe (UNECE) and the ADB – have offered policy and technical assistance. This support has bolstered government capacity, improved road safety and advanced the liberalisation of Georgian Rail, the state-owned national railway, while ensuring its fiscal sustainability.

High-priority actions for sustainable transport at the city level

High priority actions at city-level

Short-term (by 2030)	Medium-term (by 2035)	Long-term (2040 and beyond)
Clean vehicles		
• Leverage international finance to invest in electric fleets and public and depot charging • Leverage international finance to coordinate joint procurement of e-buses and public EV fleets and charging infrastructure • Develop and implement "soft" incentives for EVs (e.g. reduce registration taxes, parking fees) • Increase enforcement of emissions for in-use fleet, increase fines for violations • Trial zero- or low-emissions zones and/or combustion car bans in Tbilisi	• Install smart meters and trial time-of-use or two-tier electricity pricing before deploying these at a national level • Require fuel stations to provide EV charging • Establish zero- or low-emissions zones and/or combustion car bans in major cities • Promote coordination among DSOs, CPOs/MSPs, demand aggregators and public transport authorities, to exploit vehicle-electricity system integration opportunities	• Further increase and differentiate parking fees • Develop regulations and/or incentives to accelerate the deregistration of conventional ICE vehicles, starting with the highest polluting and oldest vehicles • Designate EV-only parking areas; decommission and repurpose petrol stations • Trial new policies, technologies and business models, such as vehicle-to-grid (V2G), congestion charges, automated and connected vehicles, etc.
Multimodal		
• Finalise and bring into operation metro, Bus Rapid Transit, priority bus lane and non-motorised transport projects already underway • Leverage international finance to optimise, connect and coordinate multimodal transport, including public transit (buses and rail) and non-motorised transport (walking and cycling) • Restructure ownership, operations, and routes of Marshrutkas and public buses (including Bus Rapid Transit) • Develop and implement integrated urban and transport design (e.g. "superblocks," traffic calming) in Tbilisi, Kutaisi and Batumi • Design and conduct recurring travel and/or activity surveys	• Adopt dynamic parking pricing, promote efficient use of space to generate revenue • Continue to improve and integrate public bus and Marshrutka routes, schedules, and access • Develop and implement urban planning across major cities to improve safety and mobility by encouraging walking and cycling • Restrict access to certain districts to electric trucks or pedal-assisted electric bicycles • Improve service in public transit, aiming to align with international best practice • Allocate public revenues (e.g. parking fees) to fund e-bus and public fleet procurement, and install publicly accessible charging infrastructure	• Renew fleets; modernise and extend public transit networks based on projected demand • Secure public revenue to ensure financial sustainability of high-quality public transit • Pursue a "15-minute city" wherever viable • Adopt the European Union's "Vision Zero" goal of eliminating road deaths by 2050 • Pedestrianise high-value cultural areas and high-density commercial districts • Explore opportunities for economic and efficient paratransit using Automated Vehicles (AVs),

Over the past decade, Georgia has secured significant funding and technical support from European and other multilateral development banks while awarding several large projects to cost-competitive firms, mainly from China. Recent

examples include the Rikoti Pass along the country's East-West Highway (with funding from the ADB and the European Investment Bank), and the Kvesheti-Kobi Road along the North-South Highway (with funding from the ADB and the EBRD).

Sustaining progress will require Georgia to align investment with national priorities, integrate more closely with European markets and court Chinese clean-tech partners in areas such as EVs and batteries. In the medium-to-long term, Georgia must also shift away from concessional finance from international institutions and develop new sources of domestic capital from both the public and private sectors to support cleaner and more efficient transport.

The recommended policies would advance integration with the European Union while delivering economic and social benefits. Over the past decade, Georgia has been steadily aligning its laws and regulations with those of the European Union. In 2014, the country signed an Association Agreement with the bloc, followed by accession to the Energy Community in 2017. In 2022, Georgia formally applied for European Union membership. Approval is by no means guaranteed, however, so it is important that Georgia pursue EU integration in a pragmatic way. Immediate benefits include regaining access to EU funding for national and local authorities and securing continued international financing for key energy, infrastructure and sustainable mobility projects. Over the long term, Georgia is well placed to benefit from EU industrial and climate policies, and to leverage its location, resources and workforce to develop advanced clean energy technologies for the European market.

Transport reforms already aligned with EU standards have improved health, quality of life and economic efficiency. Further integration can unlock opportunities for Georgia under the European Union's industrial, economic development and environmental policies, such as the Social Climate Fund, Green Deal, "Fit for 55" and RePowerEU, as well as mechanisms like the Emissions Trading System (ETS), the Carbon Border Adjustment Mechanism (CBAM) and the Renewable Energy Directive. Georgia's low-emissions electricity mix, competitive wages and position as a corridor between Asia and Europe make it well suited to low-carbon industries. Securing financing for a deep-sea port at Anaklia remains a priority. The project would ease cargo handling bottlenecks and allow Georgia to capitalise on its position as a transit hub between Asia and Europe. At the same time, it is critical that Georgia retains majority ownership of this key infrastructure asset and that the port development creates local jobs and delivers economic benefits.

This roadmap urges Georgia to press ahead with EU-aligned reforms while leveraging its clean energy and labour advantages to develop clean technology industries for export to Europe. It should also seek strategic partnerships with global leaders in areas such as EVs and batteries to strengthen domestic industrial capacity.

Beyond the specific measures summarised in the table above, this report highlights **seven policies that should be considered at the national level**:

1. **Build government capacity for the transition**: The new Interdepartmental Commission for the Development of the Transport and Logistics Sector of Georgia, established in August 2023, provides a platform for cross-agency coordination. It should set up working groups on key technologies, such as an EV taskforce. The national statistics agency, Geostat, should strengthen data collection, validation and public access to better inform policy. Policy should emphasise the economic, equity and industrial benefits of sustainable transport, with efficiency and electrification driving progress beyond energy and climate goals.

2. **Revamp regulations and fiscal policy to spur road electrification**: Fuel and vehicle taxes should be gradually adjusted to reduce dependence on imported oil. Phased reforms to the electricity sector can help capture the grid benefits of EVs, starting with flexible charging and eventually enabling additional grid services.

3. **Mobilise climate finance and build a sustainable and resilient tax base**: Adopt policies to attract climate finance, including concessional and blended funding, and explore joint tenders for electric buses. Develop a long-term, sustainable taxation framework to fund transport infrastructure, including freight corridors, multimodal urban transport, highways and the redesign of city streets. Align taxes with industrial and technology transition goals, and craft policies that encourage private investment, complemented by public funds when needed.

4. **Invest in skills and education**: Georgia has no dedicated funding for climate and energy research and development. The 2024 National Energy and Climate Plan (NECP) initially aimed to increase investment and education reforms for clean technology, with a target budget of 1% of GDP for research, innovation and competition as well as EV infrastructure and training. Unfortunately, this goal – already insufficient for addressing Georgia's energy and climate challenges – was removed from the final plan. Broader public education and support for independent, technically competent media are also needed to sustain long-term climate action and a just transition.

5. **Create an expert task force on EVs**: Rapid EV adoption is key to sustainable road transport, requiring strong grid and charging infrastructure. Coordination between the power and transport sectors is needed for grid connections, capacity upgrades, smart grids and strategic charging deployment. A multi-stakeholder task force – including ministries, regulators, utilities, industry, academia and civil society – should be established to oversee the transition.

6. **Pursue clean technology partnerships**: Georgia should use its renewable energy – especially hydropower – to expand biofuels manufacturing and attract clean technology, including EVs, green hydrogen derivatives and batteries. The country should leverage its access to the European market, explore ways to encourage Chinese investment and technology transfers, build local skills and ensure that government ministries and agencies engage with prospective partners in a coordinated manner.

Accelerate digitalisation in transport: Digitalisation can improve efficiency and safety, lower emissions and create jobs, but delays in adoption risk leaving the country behind more advanced peers. Mobility-as-a-Service (MaaS), which integrates shared transport modes, is one solution that could boost accessibility and facilitate sustainable travel. In freight, digital tools exist for optimising cargo flow and infrastructure use, which can lower both costs and emissions.

Transport in Georgia: Taking stock

Highlights

- The transport sector in Georgia is a key contributor to economic growth, contributing around 6% to 7% to GDP.
- Georgia has served as a model for integration between the South Caucasus and Europe. It joined the World Trade Organisation (WTO) in 2000 and signed an EU Association Agreement that included membership in the Deep and Comprehensive Free Trade Area, which took effect in 2016. In 2017, it acceded to the Energy Community Treaty, committing to EU energy rules. Since 2019, the adoption of reforms to meet these obligations and the *acquis communautaire* has transformed Georgia's energy market.
- Georgia's transport system is a vital link in regional trade, connecting Europe and Asia through east-west and north-south corridors. Georgia has invested substantially to expand its capacity to handle cross-border cargo flows.
- Georgian rail is undergoing major organisational reforms. These reforms aim to improve the operational efficiency, level of service and financial sustainability of rail. The also bring Georgian regulations in line with EU directives.
- Rising incomes since 2000 have quadrupled car ownership. As the on-road fleet of cars and trucks has grown, so have transport energy use and emissions – both of which increased fivefold from 2000-2023.
- Vehicle trade is a major economic activity in Georgia: Passenger cars are the country's biggest imported commodity by value, while re-exports of cars are the second-largest export.
- Road transport accounts for more than 98% of Georgia's domestic transport energy use, and an even larger share of CO_2 emissions from transport. Vehicles are a significant source of air pollution in major cities.
- Georgia imports almost all of its oil and natural gas. Gasoline and diesel make up around 85% of imported oil products.
- Hydropower generates 75% to 80% of domestically consumed electricity. Abundant hydro, combined with strong solar and wind potential, positions Georgia to gain economically, environmentally and in terms of energy security from road transport electrification.
- Shifting activity to less energy-intensive and lower emission transport modes (e.g. rail and shipping) can boost Georgia's cargo throughput while improving freight flexibility, resilience and overall economic growth.

Status and key developments

Transportation is a key contributor to Georgia's economic growth. Economic activity associated with transport and warehousing in the country has grown rapidly, outpacing gross domestic product (GDP). Between 2010 and 2022, transport's contribution to GDP nearly tripled, increasing from 1.4 billion GEL (520 million USD) to 4.1 billion GEL (1.52 billion USD). In 2023, transport and storage combined contributed 6.5% to Georgia's GDP.

Transport and storage employed around 8% of Georgia's workforce in 2023. Cargo movements spurred by Russia's 2022 full-scale invasion of Ukraine pushed up sector wages by more than 25%, above the national average, despite an 8.5% drop in employment from broader labour market shifts. Overall, Georgia's strategic location, infrastructure upgrades and participation in regional programmes have bolstered its economic resilience, improved connectivity and supported sustainable trade growth.

Economic reforms and liberalisation boost development prospects

Georgia has served as a model of liberalisation in the South Caucasus. After joining the WTO in 2000, it signed an Association Agreement with the European Union in 2014, including membership in the Deep and Comprehensive Free Trade Area, which took effect in 2016. Georgia also acceded to the Energy Community Treaty in 2017, committing to transpose EU energy legislation, including the Third Energy Package. Reforms to comply with these obligations and the *acquis communautaire* (the body of EU laws and regulations) began in 2019, transforming the country's energy market.[1] In December 2023, Georgia was granted EU candidate status, but the process was later suspended and most direct EU funding to central and local governments frozen after passage of the "Foreign agents registration act".[2]

Strong economic liberalisation, improved governance and abundant natural resources make Georgia highly attractive for foreign investment. From 2000 to 2023, the population declined slightly, at an annual average of 0.75%, while the number of households increased. The economy grew rapidly, with per capita GDP increasing more than tenfold, thanks largely to improved governance and an

[1] Reforms to Georgia's electricity and gas markets to comply with the EU's Third Energy Package are supported by a policy-based loan from KfW and AFD. The project includes 26 technical assistance measures to accelerate energy efficiency, such as the 2020 Law on Energy Efficiency, which implements the 2012 EU Energy Efficiency Directive (EED 2012/27/EU), and to liberalise electricity and gas markets, including the 2019 Law on Energy and Water Supply, as well as legislation on energy labelling and building energy efficiency.

[2] Over concerns of democratic backsliding, the European Commission stripped funding of EUR 121 million that had been previously allocated over the period 2022-2024. Funding will continue to flow to sectoral projects that focus on socio-economic and regional development (including in transport), investment projects, and civil society / human rights.

attractive business environment. The share of the population living in cities increased to 61% over the period from 53%, while the population is steadily aging due to lower fertility rates and emigration. Younger Georgians are increasingly moving to cities, concentrating economic activity in urban areas.

Economic gains have been broadly shared: average real incomes rose by nearly 50% from 2009 to 2019, and combined declared income plus social assistance for vulnerable groups increased by 86%. Real energy tariffs decreased – household electricity by 14.4% and natural gas by 20% – while access expanded. These improvements, together with a competitive business environment, a strategic location and strong institutional reforms, have positioned Georgia to capitalise on its economic, energy and transport potential while pursuing EU-aligned policy integration.

Key indicators of Georgia's progress in sustainable transport

	Indicator	Value	Year	Source
Demographic / Economic	Population	3.7 million	2024	Geostat, 2024
	Urban population	61%	2024	UN DESA, 2024
	GDP (PPP)	USD 104.4 billion	2024	World Bank, 2025
	GDP per capita – PPP (current international USD)	USD 28 418	2024	World Bank, 2025
	Life expectancy at birth	71.7 years	2023	World Bank, 2024
	Real GDP growth rate	7.5%	2024	Geostat, 2024
Financial	Fossil fuel subsidies, explicit *	USD 3.1 billion (2.7 natural gas; 0.4 electricity)	2022	IMF, 2023
	Fossil fuel subsidies, implicit **	USD 2.6 billion (99% for road petrol and diesel)	2022	IMF, 2023
	Climate-related official development assistance	USD 5.92 million (2021 USD)	2021	OECD, 2023
	Lending interest rate	12%	2024	World Bank, 2025
	Country risk / business climate grades	B / A3	2023	Coface, 2024
Energy / Emissions	Net oil and products imports	73.5 PJ (99% of which is oil products)	2024	IEA, 2025
	Renewable share in final energy consumption (SDG 7.2)	21.3%	2023	IEA, 2024
	Share of imports in total energy supply (TES)	85.5%	2024	IEA, 2025
	Share of renewables in electricity generation	80.2% (of which hydropower is >99%)	2024	IEA, 2025
	Carbon intensity of electricity generation	87 gCO_2-eq/kWh (primary)	2024	IEA, 2025
	Transport (road) share of energy-related direct CO_2 emissions	42% (34%)	2022	IEA, 2023
	Transport (and road) GHG emissions per capita	1.23 (1.06) tonnes CO_2-eq/capita	2023	IEA, 2025
	National average $PM_{2.5}$ concentration	16.4 (ranked 62 of 134)	2023	IQAir, 2024

	Indicator	Value	Year	Source
Fuel prices	Gasoline price	Georgian Lari (GEL) 3.1/litre	2024	Geostat, 2025
	Diesel price	GEL 3.3/litre	2024	Geostat, 2025
	Natural gas	GEL 1.6/m^3	2024	Geostat, 2025
Transport system	Country mobility performance (score)	# 57 / 183 Countries	2022	SUM4All
	Percent of urban residents near protected bikeways	7%	2023	ITDP, 2024
	Percent of urban residents near services (walkability)	82%	2023	ITDP, 2024
	Annual deaths associated with road accidents	11.5 deaths per 100 000 people	2022	Geostat, 2024
	$PM_{2.5}$ annual deaths attributed to road transport	1.61 deaths per 100 000 people	2019	McDuffie et al., 2021

* The International Monetary Fund (IMF) distinguishes between explicit and implicit subsidies. Explicit subsidies come from undercharging for the supply costs of fossil fuels. Explicit fossil-fuel subsidies in Georgia include: (i) tax exemptions to oil and gas producing companies (Georgia Oil and Gas Limited, Norioshkhevi Georgia, and GNV Georgia) for certain operations, and (ii) full cost compensation for provision of free gas to households in the Kazbegi and Dusheti municipalities. In addition, Georgia's taxation of road fuels falls well below the rates that would incorporate the full cost of externalities.

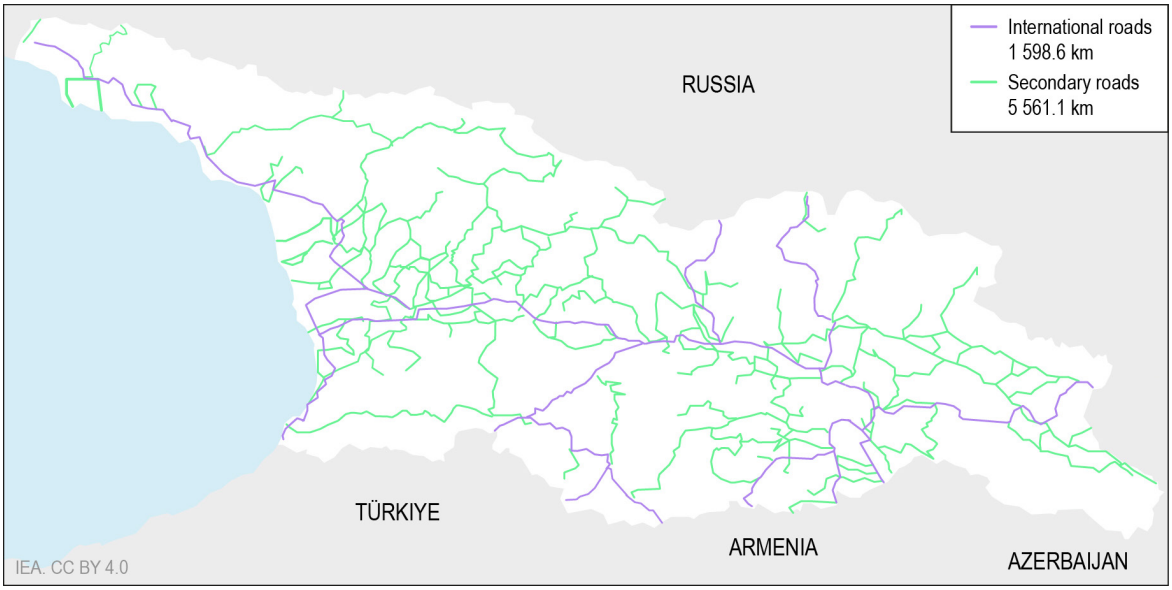
** The IMF distinguishes between explicit and implicit subsidies. Implicit subsidies come from undercharging for environmental costs and forgone consumption tax revenues.

Freight and regional connectivity

Georgia seeks to expand its role as a regional transit and freight hub

Georgia's transport system is a vital link in the historic Silk Road network and remains a key trading hub, connecting Europe and Asia through east-west and north-south corridors. Cargo shipments rely mainly on roads, rail and shipping via Black Sea ports (Batumi and Poti). Roughly 60% of freight is transported by road, which also accounts for about one-third of transport-related emissions. The country also serves as a transit route for energy commodities, including electricity, oil and natural gas, supported by several major pipelines and ongoing upgrades to electricity and gas infrastructure funded by the European Union, World Bank, Germany's Kreditanstalt für Wiederaufbau (KfW), and the European Bank for Reconstruction and Development (EBRD).

Georgia's international and secondary roads



Source: Ministry of Economy and Sustainable Development of Georgia.

The 11-country Central Asia Regional Economic Cooperation (CAREC) programme,[3] led by the Asian Development Bank (ADB), has strengthened Georgia's transport infrastructure, streamlined customs and enhanced regional trade competitiveness. Investments in roads, including the East-West Highway,

[3] CAREC is a regional cooperation initiative aimed at enhancing connectivity, trade and economic integration across Central Asia and its neighbouring regions. The programme also supports institutional development through the adoption of international standards and the promotion of public-private partnerships.

as well as border facilities and transport policy reforms, have improved transit efficiency, reduced travel times and increased safety along critical corridors. CAREC's Corridor Performance Measurement and Monitoring system tracks and enhances trade corridor performance, while Georgia is piloting the digital CAREC Advanced Transit System (CATS) to simplify cross-border procedures and cut costs.

International lenders have helped Georgia modernise its road network, with a focus on regional cargo routes. As of the second quarter of 2025, the total length of completed and operational highway network is 377 kilometres. Over the past decade, agencies such as the World Bank, European Investment Bank (EIB), and the Asian Development Bank (ADB) have financed major upgrades to Georgia's main transport routes, especially the East-West Highway. In 2024, work advanced on the most difficult stretch, known as the Rikoti Pass Road, with its just under 100 bridges and around 50 tunnels, with only four kilometres of the 52-kilometre stretch remaining under construction.

In a 2023 report, the World Bank also identified policies and investments that could help to triple regional cargo capacity across the middle corridor and slash travel times by half. The ADB and the EBRD were the main international financiers for the Kvesheti-Kobi Road segment on the North-South Highway. The segment, completed in 2024, reduces travel time and makes the route connecting Russia, Georgia and Armenia passable even after severe winter storms.

Investments in the east-west and north-south corridors aim to expand Georgia's role in global cargo flows and improve rural-urban connections. By late 2024, more than 70% of the 302-kilometre East-West Highway was complete and open to traffic, with 35 kilometres under construction. Completion of the entire 430-kilometre route is expected by 2030.

Georgia has also deepened regional ties: In 2022, it adopted a joint roadmap with Azerbaijan, Kazakhstan and Türkiye to accelerate multimodal freight rail service, and, in 2023, launched Middle Corridor Multimodal, a logistics joint venture linking the Azerbaijan, Kazakhstan and Georgian railways – and joined in 2025 by the China Railway Container Transport Corporation. The venture aims to harmonise tariffs, integrate infrastructure, unify transit services and speed cargo along the China-Europe route.

Since 2010, Georgia has invested USD 1 billion to upgrade rail infrastructure

Rail freight in Georgia surged in 2022 following Russia's full-scale invasion of Ukraine, before falling slightly in 2023. Transit movements now account for around 60% of rail cargo, up from around 50% prior to 2021. Imports make up

roughly one-quarter of rail shipments, followed by domestic and export cargo. The main commodities shipped by rail include oil and oil products, chemicals, metals, coal, gas and food products. Kazakhstan, Armenia and Russia are the main destinations for commodity exports, while nearly half of imports (mostly oil products) come from Russia. Additional oil product imports come from Azerbaijan, Romania, Bulgaria and Türkiye.

Although most of Georgia's railway network is electrified, diesel locomotives remain in use, mostly on non-electrified and low-traffic freight corridors – including areas where electrification is not economically feasible. Some low-demand passenger routes still use older DR1AM diesel trainsets,[4] underscoring the economic and technological limits to rapid electrification and modernisation.

Rail upgrades are set to bolster Georgia's role in the middle corridor, linking central Asia and China to Europe by increasing freight capacity to 48 million tonnes annually. Investments totalling around EUR 150 million from 2011 to 2024 delivered significant upgrades to the Tbilisi-Makhinjauri (Batumi) line, including tunnels and bridges, the addition of new tracks and the modernisation of rolling stock.[5] Digital systems, new logistics centres, and multimodal hubs are being developed to improve efficiency. These improvements are expected to cut travel times between Tbilisi and Batumi by more than 40 minutes, making rail journeys shorter than by road. They will also improve operational and technical efficiency, as well as system reliability and durability, while reducing the carbon intensity of rail operations. The upgrades are financed through green bonds and support from the EBRD.

Georgia's rail lines are interoperable with Azerbaijan and Kazakhstan, sharing a common gauge and other infrastructure inherited from the Soviet railway system. The USD 1 billion Baku-Tbilisi-Kars line,[6] expected to expand cargo capacity significantly,[7] is scheduled to be completed by the end of 2025.

[4] As of 2023, only 23 of 107 locomotives were diesel. Diesel locomotives are no longer used on main railway lines, but are still deployed for shunting and on infrequently used, non-electrified sidings.
[5] The installation of a safety system in Tunnel IX of the project is underway, with completion scheduled for the end of November 2025.
[6] The new line, including segments in Georgia and Azerbaijan, is being financed by the Azerbaijan State Oil Fund (SOFAZ). The country has also conducted feasibility studies options for future infrastructure projects, including a 2024 World Bank-backed study on a potential high-speed network.
[7] The Baku-Tbilisi-Kars railway project stretches for 180 kilometres from Marabda to Kartsakhi. The project's longest section – 153 kilometres – entails the reconstruction and rehabilitation of the line between Marabda and Akhalkalaki. An additional 27 kilometres of new track will be laid from Akhalkalaki to Kartsakhi, near the Turkish border. Once completed, the line will carry up to 5 million tonnes of goods and 1 million passengers per year. Pilot shipments have run since October 2017. As of Q3 2025, the project is 98.5% complete and is due to finish by the end of 2025.

Georgian Rail is reforming to improve governance and secure its long-term financial stability

A major effort is under way at Georgian Rail to boost efficiency and service quality, stabilise finances and align operations with EU directives. One of the country's largest state-owned firms, Georgian Rail employed 12 378 people in 2022, and until recently operated as a vertically integrated company, managing tracks, stations and trains.

The ongoing reforms, launched in 2023, will give Georgian Rail a new legal and institutional framework aimed at improving safety, bolstering organisational and staff capabilities and enhancing sector transparency and competitiveness.

Until recently, passenger fares and costs were cross-subsidised by freight, which accounted for 57% of base revenue and 90% including ancillary services. Through the early 2010s, oil product shipments generated high profits, but pipelines from Kazakhstan and Azerbaijan diverted much of this traffic, causing sharp revenue losses.

In June 2024, the Rail Transport Agency – a legal entity of public law under the Ministry of Economy and Sustainable Development (MoESD) – signed a direct Public Service Contract with JSC Georgian Railway for passenger rail services. The contract funds passenger rail through 2028, and requires the operator to ensure specific routes, service levels and frequencies.

The ADB and Agence Française de Développement (AFD) backed the reforms with EUR 20 million in loans and technical assistance in 2022-2023, helping to identify key challenges and measures. Their policy recommendations were presented at the Inter-Agency Transport Commission meeting in August 2023 for consideration in future National Transport and Logistics Strategy action plans. These recommendations – which inform the ongoing discussions but are not being adopted in full – target regulation, governance, restructuring and debt management. The proposed actions focus on the following areas:

- **Corporate governance**: Split Georgian Railway into three entities for infrastructure, freight and passenger operations.
- **Financial sustainability**: Address legacy indebtedness by using instruments such as green bonds or Eurobonds to refinance high-cost debt, reset coverage ratios for profitability and debt service and ensure that public service obligations are managed prudently.
- **Operational efficiency**: Trim the workforce by 3 000 to 5 000, with decisions on staff cuts made by an independent board.
- **Demand-driven services**: Align freight and passenger operations with market needs and public service obligations.

- **Strategic and legal frameworks**: Strengthen regulation and oversight by enacting laws that clearly define the roles, responsibilities and powers of a public rail regulator, and by establishing a legal basis for monitoring its safety, finances and operations.
- **Debt and subsidies**: Restructure or retire legacy debt and provide fiscal support for loss-making services and maintenance.
- **Equal treatment**: Promote fair competition between rail and road freight.
- **National development alignment**: Align reforms with Georgia's growth and public finance objectives.

Reforms also focus on EU compliance, requiring legal separation of infrastructure, freight, and passenger services to prevent cross-subsidisation. Going forward, the government will directly subsidise passenger rail under public service agreements. Additional measures include updated safety standards, driver and locomotive certification and new protocols for transporting hazardous goods.

Expanded rail capacity puts Georgia in position to absorb cargo flows diverted by the conflict in Ukraine

Russia's large-scale invasion of Ukraine has shifted cargo flows from the northern corridor through Russia to Georgia's middle corridor,[8] boosting its role in Eurasian trade. Transport volumes rose more than sixfold from 2021 to 2022, with trucks absorbing most of the growth and rail cargo up by more than 20%.

This surge coincided with the major infrastructure investments outlined above. Georgia spent more than USD 1 billion per year on transport infrastructure from 2023 to 2024, with similar levels planned for 2025-2026. The spending has gone primarily to road upgrades, the East-West Highway, and rail, as well as pipelines and airports.

Maritime trade is also up, though constrained by the lack of a deep-sea port. A project to expand the capacity at the Port of Poti – which currently handles 80% of Georgia's containers – is planned, pending a final investment agreement, while the Port of Batumi serves smaller ships that can carry up to 40 000 deadweight tonnes (DWT). Most Georgian port traffic involves even smaller vessels (less than 20 000 DWT).

A deep-sea port at Anaklia, intended to handle larger cargo volumes and backed by international lenders, was planned in the 2010s, but the project collapsed amid protracted litigation that has continued into 2025. The government eventually

[8] The northern corridor began with the European Union's Transport Corridor Europe-Caucasus-Asia (TRACECA) programme, which launched in 1993 and now encompasses 13 countries. China's 2013 Belt and Road Initiative further boosted trade along the middle corridor, linking China through Central Asia and the South Caucasus to Türkiye and Europe. In 2018, the Lapis Lazuli Corridor opened, connecting Afghanistan to Türkiye via Turkmenistan, Azerbaijan and Georgia.

sought new partners but insisted on retaining a majority stake. In May 2024, a preliminary deal was struck with a Chinese-Singaporean consortium, granting Georgia 51% control. After multiple rounds of clarifications and revisions, negotiations with the consortium over project financing are still ongoing, and the search for a private partner continues. In parallel, the government has secured a contract with a Dutch partner for preparatory works for the design and construction of marine infrastructure – including dredging and a breakwater. These preparatory works began in September 2024.

Expanding multimodal hubs could enhance efficiency, storage capacity and resilience in Georgia's domestic and regional cargo transport. In addition to investments in multimodal hubs, planners are exploring freight "transloading" – directly loading trucks onto railcars to speed movement along the east-west corridor and give long-haul drivers the opportunity to rest. With financing secured and construction set to begin, the Anaklia deep-sea port could further boost freight along the middle corridor linking Asia and Europe.

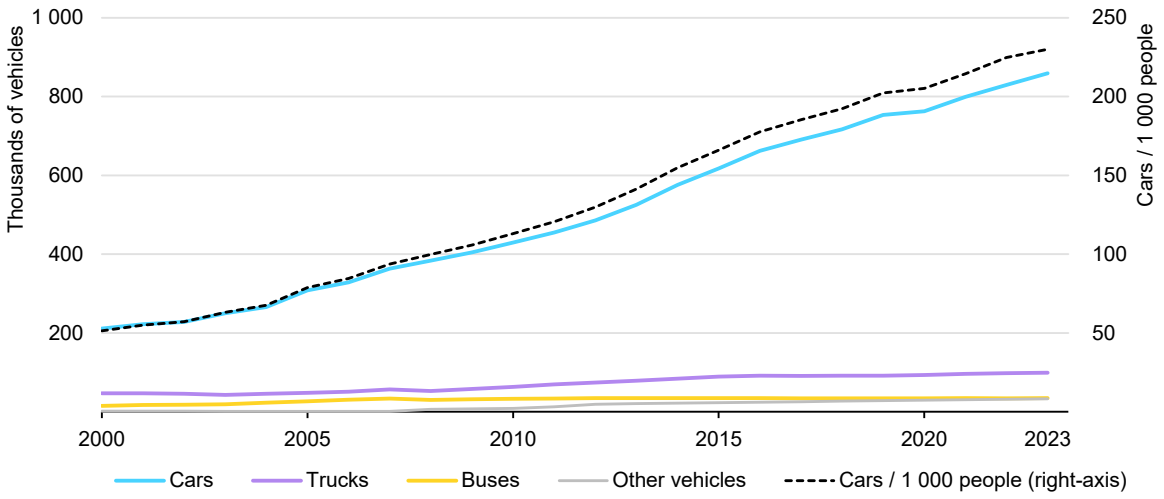
Rail modernisation, better regional connectivity and new ports promise economic and trade benefits. The impact on greenhouse gas (GHG) emissions is less certain, depending on truck efficiency and the pace of rail and maritime growth. To maximise benefits, investments should prioritise digital technologies, rail and truck electrification, and multimodal integration – supporting future trade growth while limiting fossil fuel use and environmental damage.

Car ownership and trade

Rising incomes and the spread of car financing models have caused car ownership to quadruple since 2000. Georgia has seen rapid motorisation in the post-Soviet, and, as in other emerging-market economies, car ownership closely tracks household income growth. Income per capita increased more than tenfold between 2000 and 2023, driving up car ownership more than fourfold to 230 vehicles per 1 000 people – from roughly 51 per 1 000 previously.[9] By comparison, this is slightly above China (213 cars per 1 000 people) but still less than half the rate in France (570 per 1 000).

[9] As in many countries, official statistics tend to overstate the number of vehicles actually in use, as cars rarely leave the registry, except when sold for scrap or export, or are removed from corporate fleets. Based on vehicle-inspection data used to model Georgia's road sector fuel consumption and emissions, the actual in-use car fleet totalled roughly 670 000 to 690 000 vehicles – about half the number reported in official statistics. This estimate aligns broadly with an analysis of Tbilisi's private in-use fleet and draws on the author's and other experts' knowledge of road vehicle operations, including typical fuel consumption and annual mileage (kilometres per year). In 2000, the number of vehicles actually in use was likely between 220 000 and 230 000, close to the reported fleet of 245 000. By contrast, Georgia's official statistical agency, Geostat, put the registered car fleet at 1 483 600 in 2023 – roughly twice the in-use fleet estimated here. Estimates of the actual in-use fleet of buses and "other" vehicles (mostly motorcycles) are similarly well below the registered numbers, while the gap for trucks is much smaller, at around 10%.

In-use vehicle fleet and cars per 1 000 people in Georgia, 2000-2023



Notes: In-use fleet estimates cited here differ from Geostat's total registered vehicles, since cars that are no longer operating are rarely removed from the registry. See the footnote (9) for further explanation.
"Other" vehicles include agricultural vehicles and industrial transport vehicles.

In the wake of the 2008 global financial crisis, Georgian banks began offering structured car loans, which covered 15% to 40% of vehicle sales. Loans for hybrid and EVs were introduced in 2012, and by 2016 had evolved into EV-specific products with no down payment and lower interest (annual rates of 11% compared to 20% or more for other loans).

Vehicle imports and re-exports have grown more than fivefold, to USD 3.3 billion. Vehicle trade is a major economic activity in Georgia: passenger cars are the largest goods import by value, and re-exports of cars rank second in terms of exports. Most come from the United States (58% in 2023), followed by Japan (18%) and Germany (10%), as well as Türkiye, the United Kingdom, South Korea and other European countries. Many cars are re-exported to Kyrgyzstan (19%), Kazakhstan (18%), Azerbaijan (13%), Armenia (9%), Ukraine, Russia and the United Arab Emirates (UAE).

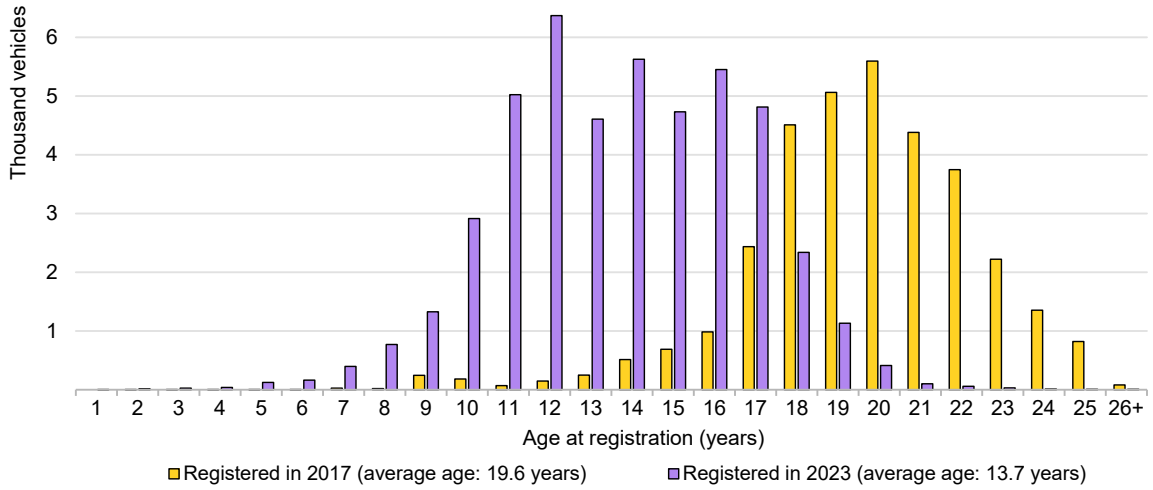
Most net car imports are used vehicles. Between 2017 and 2023, new cars made up 6% to 12% of net imports by volume (9% in 2023) and between 16% and 32% by value. In 2023, about 25% of new vehicle imports were hybrids and 6% were EVs; electric cars made up only 1.5% of overall imports. The rest run on gasoline (41% to 68%) or diesel (8% to 15%), with some gasoline cars converted to compressed natural gas (CNG) or liquefied petroleum gas (LPG). Many used internal combustion and hybrid vehicles enter the country via insurance auctions of salvage or damaged vehicles. Used EVs are seldom imported this way, however: they are typically used cars that are imported either privately (e.g. by individuals or small businesses) or through dealers or importers.

China has recently emerged as the top exporter of new EVs to Georgia, with exports reaching USD 9 million by value in 2022 and USD 14.7 million in 2023. While Chinese EVs accounted for just 0.5% of total vehicle trade in 2023 (around USD 3.3 billion), their affordability is expected to drive a growing share of imports in Georgia (as in other emerging markets and developing economies) over the coming decade.

Other vehicles (e.g. motorcycles, buses and trucks) account for 10% to 15% of gross imports by value and volume. Top exporters are Germany (28%), China (13%) and Japan (12%), with 20% to 30% of these vehicles destined for Armenia, Azerbaijan, Türkiye, Kyrgyzstan and Kazakhstan.

Higher import duties, stricter pollutant emissions standards and rising incomes are driving imports of newer models. Increased vehicle import duties, together with stricter emissions standards (both are discussed in more detail later in this report), have significantly lowered the average age (by model year) of Georgia's vehicle imports. The median age of registered vehicles was just under 14 years in 2023, down from around 20 years in 2017.

Age distribution of used vehicle imports registered in 2017 and 2023

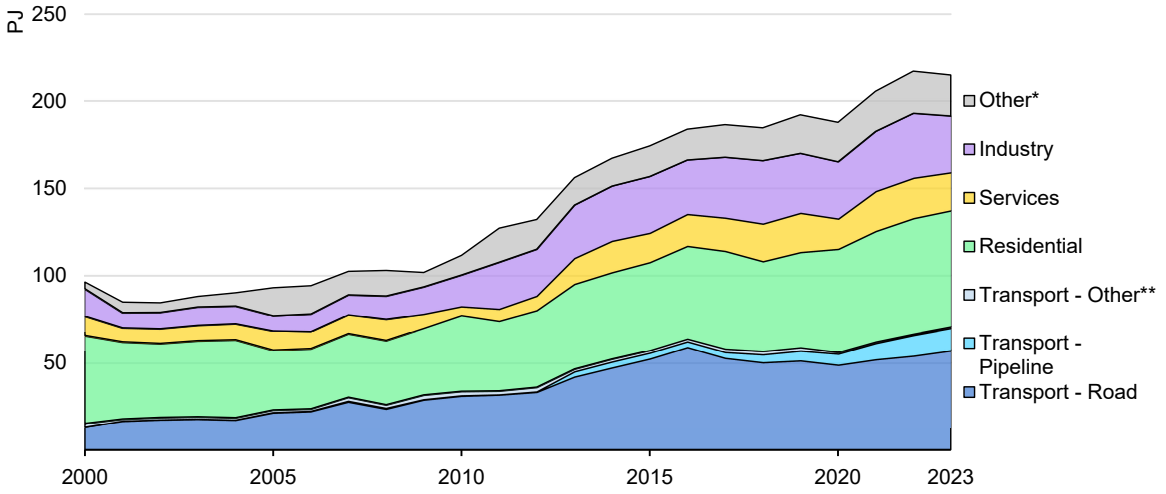


Source: Geostat (2024), Geostat Vehicle Statistics Portal (National Statistics Office of Georgia).

Energy and emissions

Transport accounts for 30% of final energy use. With a more than tripling of the car fleet and a doubling in the truck fleet since 2000, transport final energy use increased almost fivefold between 2000 and 2022. The sector's share of final energy demand nearly doubled, from 16% in 2000 to 33% in 2023.

Total final energy consumption by sector in Georgia, 2000-2023



Notes: PJ = petajoules. Other* includes agriculture, forestry, fishing, non-energy use and unspecified energy consumption. Other** includes rail transport, domestic aviation, navigation and unspecified transport consumption.
Source: IEA (2025), World Energy Balances (accessed 20 August 2025).

Road transport accounted for 81% of Georgia's total transport energy use in 2023, down from more than 90% before 2017. This decline reflects a fourfold increase in pipeline energy use as natural gas and oil transport volumes increased. Since 2017, pipeline gas use has accounted for about two-thirds of transport's natural gas consumption.

Transport has generally been the largest sectoral consumer of final energy, accounting for just over 30% in recent years, although the residential sector briefly surpassed it in 2020-2021 during the Covid-19 lockdowns. Passenger transport peaked in 2019 before falling by more than a third in 2020. Road energy use dipped below 2019 levels in 2020-2021 but had surpassed them again by 2023.

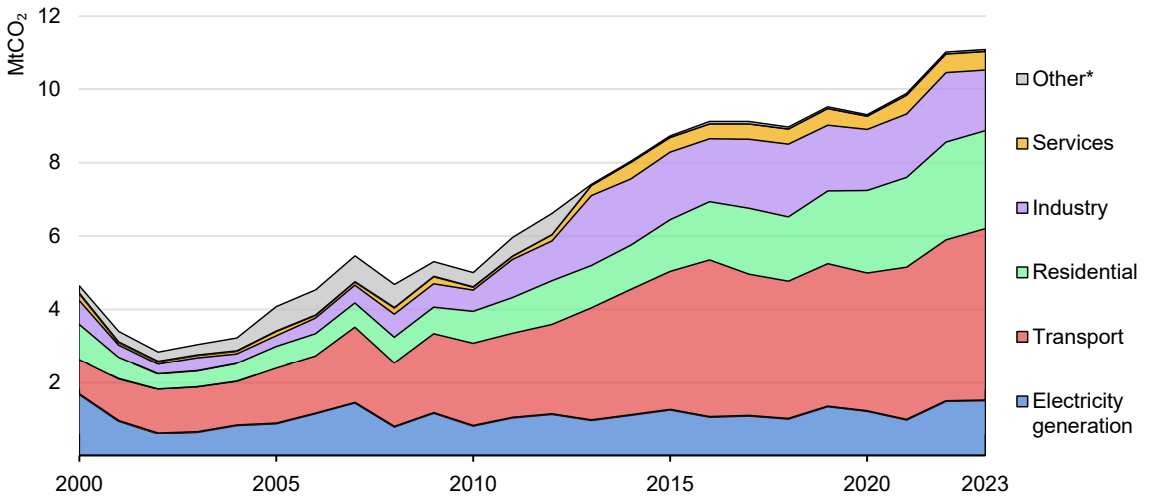
Per capita transport energy consumption grew fivefold, from under 4 gigajoules (GJ) in 2000 to more than 19 GJ in 2023. This was 73% higher than China (11 GJ per capita), while it was just 70% of French (27 GJ), and one-quarter of US (78 GJ) consumption, respectively.

Transport's share of energy-related emissions has more than doubled – to 42% in 2023 from 20% in 2000. Transport emissions have risen steadily, making the sector a major source of Georgia's fuel combustion CO_2[10] – accounting for more than 40% of total energy-related emissions[11] over the past decade. Road

[10] Georgia's latest National Greenhouse Gas (GHG) Inventory report estimates transport emissions using the Tier 1 method due to a lack of detailed activity data and country-specific emission factors, which prevents the use of higher tiers.
[11] Direct CO_2 combustion emissions include only emissions from the combustion of fossil fuels, and exclude emissions from biofuels, as these are counted under land use, land-use change and forestry (LULUCF) emissions, rather than in the energy sector. Fuel combustion CO_2 accounted for about 60% of Georgia's total GHG emissions (excluding LULUCF) in 2020.

transport dominates, accounting for more than 92% of transport emissions, driven mainly by vehicle fleet growth and increasing road freight. A sharp drop in power generation emissions between 2000 and 2001 also raised transport's share to 33% from 20%.

CO_2 emissions from fuel combustion in Georgia, 2000-2023



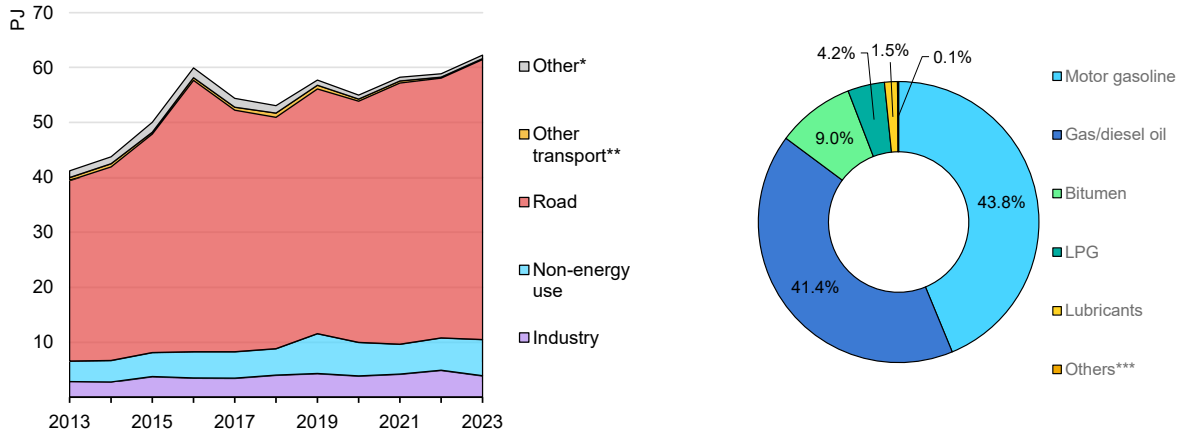
Note: $MtCO_2$ = million tonnes of carbon dioxide. Other* includes energy industries, agriculture and unspecified consumption.
Source: IEA (2025), Greenhouse Gas Emissions from Energy (accessed 20 August 2025).

Transport emissions grew fivefold from 2000 alongside rising energy demand. The increase in direct CO_2 emissions was smaller, reflecting a shift from oil products to natural gas, which emits less CO_2 from the tailpipe but has higher overall well-to-wheel GHG emissions than gasoline or diesel.

Georgia is heavily dependent on imports of oil-derived transport fuels

Despite some limited domestic crude production, Georgia relies almost entirely on imported oil products and natural gas. Imports of crude oil and oil products totalled roughly USD 1.3 billion in 2024.

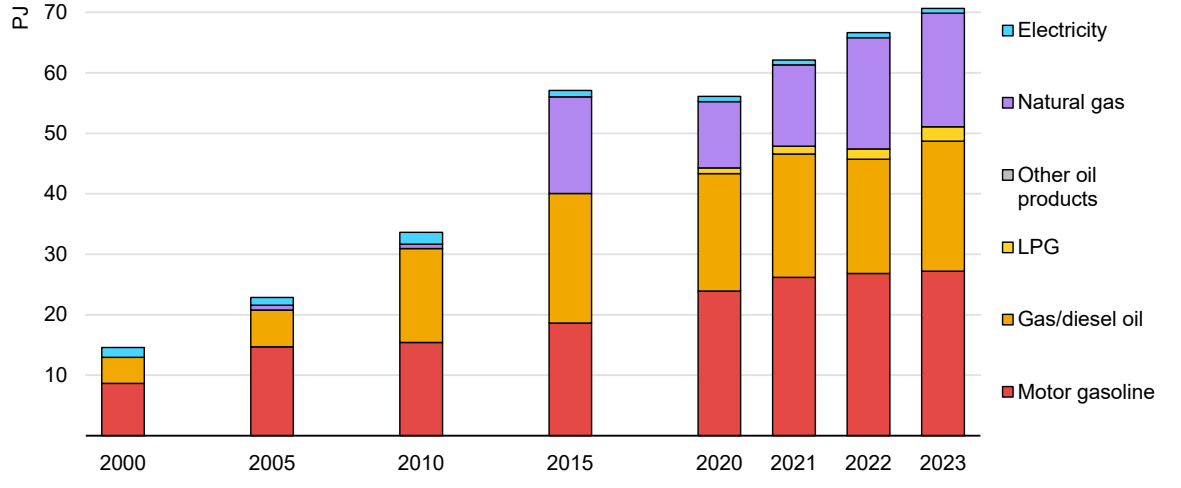
Oil and oil product use by sector (left) and consumption share by product (right), 2023



Notes: PJ = petajoules. Other* includes residential, commercial and public services, agriculture, and fishing. Other transport** includes pipelines, rail, domestic aviation and navigation. Others*** includes jet kerosene, naphtha and fuel oil.
Source: IEA (2025), World Energy Balances (accessed 20 August 2025).

Transport consumes about 80% of oil products, up from 50% in 2000, amid a collapse in demand from industry and households (-85%). Road fuels dominate, with consumption of gasoline (43.8%) and diesel (nearly 41.4%) representing more than 85% of total demand, followed by bitumen (9%), LPG (4.2%) and lubricants (1.5%).

Transport final energy consumption by fuel, 2000-2023



Notes: PJ = petajoules. Other oil products includes fuel oil and jet kerosene (domestic flights). Gas/diesel oil includes biodiesel since 2019, but the amounts are negligible.
Source: IEA (2025), World Energy Balances (accessed 20 August 2025).

Around 1 400 gasoline and diesel stations currently operate in Georgia, of which 400 are managed by four companies: Rompetrol Georgia, SOCA Georgia

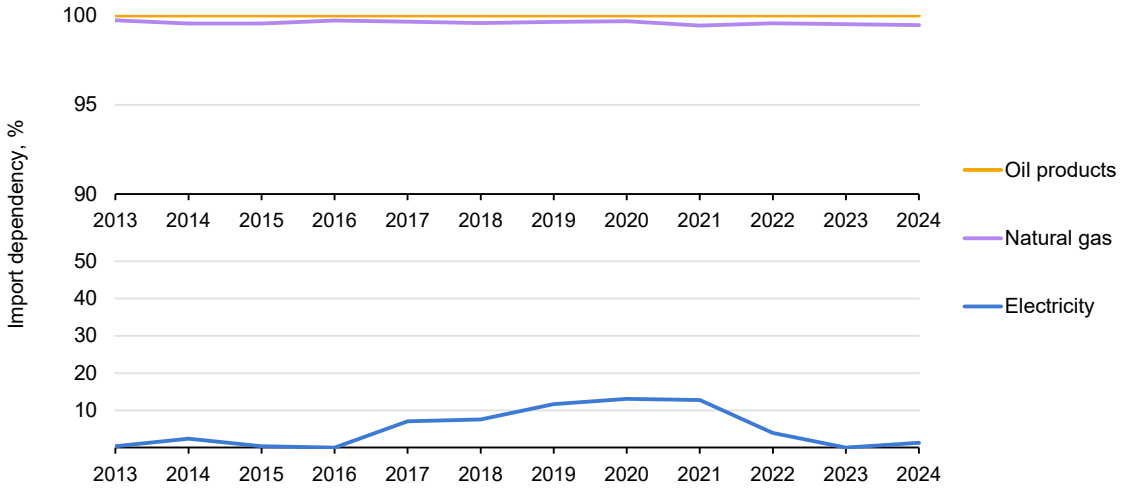
Petroleum, Gulf Georgia and Wissol Petroleum. Rompetrol, active across the Black Sea region, accounts for nearly half the retail fuel market.

Domestic crude oil production has shrunk tenfold since its peak in the early 1980s and can meet only a fraction of demand. Since 2022, around half of Georgia's oil product imports have come from Russia, with Bulgaria, Romania, Azerbaijan and Türkiye supplying most of the rest.

Georgia's imports of automotive gasoline and diesel from Russia spiked in 2021-2023. For the first time in a decade, Russia supplied over half of the country's imported gasoline by value and more than 60% of its diesel in both 2022 and 2023.

Natural gas is also almost entirely imported – mainly from Azerbaijan but increasingly also from Russia. It is used across sectors, with road transport accounting for a share that has dropped sharply, to 6.8% in 2023 from over 20% in 2014. Coal production has dropped by nearly two-thirds, while consumption has fallen by a third since 2013.

Energy import dependency, 2013-2024



Notes: Import dependency is the ratio of net imports (imports minus exports) to gross available energy. Gross available energy is the overall supply of energy for all activities on the territory of the country. This also includes energy transformation, losses and use of fossil fuel products for non-energy purposes. For electricity in 2016 and 2023, Georgia was a net exporter, and hence the import dependence is taken to be zero.

Source: IEA (2025), World Energy Balances (accessed 20 August 2025).

Georgia aims to reduce its dependence on foreign energy through domestic refining, energy efficiency and renewables development. It is pursuing this goal through investments in energy efficiency and renewables (mainly biofuels), import diversification, domestic resource exploration, and expanded gas storage. In August 2024, the government approved construction of the country's first refinery in Kulevi, near the Black Sea oil terminal, with an initial capacity of 22 000 barrels (22 kb) per day and plans for expansion. The project, aimed at reducing

reliance on refined product imports, aligns with Georgia's National Energy and Climate Plan, which prioritises attracting investors to develop a refinery on the Black Sea coast.

Renewables

Georgia is rich in hydropower and biomass resources, as well as solar and wind potential. The country has abundant renewable energy resources, including rivers for hydropower and forests for biomass. Renewables, mainly hydropower, supply about 80% of its electricity,[12] making the power mix among the world's least emissions-intensive. Policy makers have identified expanding wind, solar and geothermal energy as a key priority for climate, energy and energy security goals.

Hydropower generates most of Georgia's domestically consumed electricity, with substantial potential for additional capacity. Its hydroelectric potential is estimated at 50-60 terawatt-hours (TWh) annually, of which barely 20% is harnessed by roughly 100 plants. Hydropower provides 75% to 80% of domestic electricity, giving Georgia one of the world's lowest emissions intensities: between 80 and 120 grams of carbon dioxide per watt-hour (gCO_2/Wh) on a final energy basis.[13] This is less than one-fifth the global average, which stood at 500 gCO_2/Wh in 2024. Despite high transmission losses, Georgia's power mix is very low-carbon. Transmission system upgrades could provide a cost-effective way to improve system reliability and resilience, and would help to further reduce the carbon intensity of electricity use.

Seasonal swings creates winter import dependence (when hydro output is low and heating demand high), while summer surpluses allow for exports. Since 2008, electricity use has closely tracked real GDP growth.

Planned investments include two new hydropower stations, adding 87.7 megawatts (MW) of generation capacity by 2026 and a further 63 to 100 MW by 2030, which is later than originally planned. The 2021-2023 Climate Action Plan also calls for a 200 MWh battery project at the Ksani substation by 2026, construction of a combined-cycle gas plant beginning in 2026, and more than GEL 2 billion (about USD 745 million) in investment to modernise transmission infrastructure.

[12] The remaining 20% comes mostly from a thermal plant running on imported natural gas, as well as a small share (1%) from 20 MW of installed wind capacity.

[13] Final electricity figures include the power sector's own use as well as transmission and distribution losses. Reported values represent direct CO_2 emissions from electricity-only generation, including combined heat and power (CHP) for countries worldwide, adjusted to reflect grid losses (in grams of CO_2 per kilowatt-hour). Emissions from producing fossil fuels or radioactive materials for fossil or nuclear plants are excluded, as are embodied emissions in infrastructure (solar panels, wind turbines, hydroelectric dams) and other greenhouse gases such as methane (CH_4) and nitrous oxide (N_2O.)

Nearly 45% of Georgia is forested, storing in its biomass about 40 PJ of primary energy. In 2023, biofuels and waste made up more than 16% of domestic primary energy production but only 3.7% of total supply due to heavy reliance on imported coal, oil and gas. As recently as 2018, almost half of households – mostly in rural areas – relied on fuelwood for heating and cooking.

Unsustainable harvesting has increased landslides, flash floods and biodiversity loss, and lowered CO_2 sequestration. With increased access to gas and electricity, reliance on fuelwood is declining – but timber demand has risen since Russian exports have come under Western sanctions.

According to 2014 estimates, Georgia's sustainable biomass potential totals around 10 PJ. This includes about 7.6 PJ annually from agricultural residues, 1.8 PJ from forest management, 0.3 PJ from sawmill dust, and up to 1 PJ from energy crop plantations. Recent forest management efforts cover 270 000 hectares and promote natural renewal on 3 150 hectares, with expected emission reductions of over 3 million tonnes of carbon dioxide ($MtCO_2$) by 2030.

Based on a resource potential survey, onshore wind could generate 8 to 10 TWh annually, with the most suitable sites offering about 4 TWh. Currently, one wind plant produces less than 100 GWh (<1% of electricity). Another 28 MW of capacity is under construction and due by 2026, but 300 to 400 MW planned under the 2021-2024 climate plan has been pushed back to 2030.

Georgia enjoys between 250 and 280 sunny days per year. Abundant sunshine and affordable equipment make small-scale residential and commercial solar water heating units common. In 2022, six solar farms totalling 93 MW (and annual output of around 132 GWh) were approved. A further 68 MW is planned for 2026 and 6.8 MW for 2030.

Cheap, clean power makes electric vehicles an environmental and economic win

Electric vehicles (EVs) offer significant benefits in Georgia due to abundant hydropower and low electricity prices. The greenhouse gas emissions benefits of battery electric vehicles (BEVs) as compared with conventional gasoline or diesel cars are clear even in fossil-dependent countries such as China, but they are particularly evident in a country like Georgia. With Georgia's low-emissions electricity – which has a CO_2 emissions intensity of less than one-fifth the global average – a BEV driven 15 000 kilometres per year emits roughly one-quarter to one-sixth the CO_2 of a comparable gasoline car.

Heavily-used vehicles like taxis or buses perform even better. Georgia's draft Nationally Determined Contribution (NDC) targets an 87% share of renewables –

a goal that would further increase the life-cycle emissions advantage of EVs over conventional internal combustion engine (ICE) vehicles.

EV operating costs are around one-sixth those of conventional vehicles. With gasoline at the pump costing around USD 1.20 per litre and residential electricity at around USD 0.08 per kWh, energy costs per kilometre for a battery electric vehicle (which consumes around 0.2 kWh per kilometre) are about one-sixth of a conventional car (which burns roughly 8 litres of gasoline per 100 km). Even with occasional high-rate direct-current (DC) fast charging (which can cost as much as 0.80 per kWh), energy costs for EVs remain lower on a per kilometre-travelled basis. EVs cost about half as much to maintain as ICE cars, thanks to simpler powertrains, regenerative braking and the absence of oil and filter changes.

Higher upfront costs for EVs remain a hurdle, but falling battery prices are set to narrow the gap quickly. Although EVs have lower fuel and running costs, their higher purchase price means it typically takes four to eight years in Georgia to recoup the upfront premium over conventional cars.[14] However, with falling battery prices and the arrival of more affordable small Chinese models, EVs – especially in the compact segment – are likely to reach upfront purchase price parity in the next few years.

Challenges for transport

Georgia faces transport challenges common to many countries: cutting local pollutants and greenhouse gas (GHG) emissions,[15] improving access and affordability, easing congestion and reducing road fatalities. The past decade has brought improvements in fleet safety and cleanliness, but further action is needed to address congestion, air quality and collision risk.

New and tougher regulations, along with incentives and taxes linked to vehicle efficiency and emissions, are needed to boost adoption of cleaner, more efficient vehicles, including EVs. Stricter rules, fines and tighter enforcement of the existing fleet are also required.

[14] The wide variation in estimated amortisation of the EV premium reflects many variables affecting the operating costs of BEVs versus ICE cars, including the purchase price and energy efficiency of comparable models across segments, annual mileage, electricity prices (based on the share of fast charging) and other factors. The estimate also considers Georgia's exemption of import duties on BEVs.

[15] Climate change in Georgia will likely manifest as heat waves, more frequent and intense natural disasters (with heavier rainfall in the west and drier conditions in the east), and the spread of new pathogens and disease vectors impacting human health, agriculture and ecosystems. As outlined in further detail in this section of this report, the sector now accounts for more than 40% of Georgia's energy-related CO_2 emissions.

Meanwhile, boosting public transport, walking and cycling in major cities could yield substantial economic, health and societal benefits while reducing local pollutants and emissions.

Transport drives air pollution in Georgian cities, causing some 250 premature deaths a year

Air quality remains a major public health concern in Georgia. Recent estimates attribute 130 premature deaths per 100 000 people annually to ambient and indoor air pollution – the second-highest rate in Europe after Serbia. The economic cost of this health burden is estimated at around 3% of Georgia's GDP.

Outdoor air quality indices, which measure annual average fine particulate matter ($PM_{2.5}$) concentrations, ranked Georgia 62nd of 134 countries in 2024. Transport is a key contributor, especially in cities, where road vehicles emit significant PM, nitrogen dioxide (NO_2) and carbon monoxide (CO).[16] In Georgia, road transport accounted for more than 40% of NO_2 and 6% of PM emissions in 2023, contributing to an estimated 250 premature deaths annually, or around 5% of total deaths attributed to outdoor air pollution.

PM concentrations regularly breach World Health Organisation (WHO) limits in Georgia's four largest cities and along major highways, while NO_2 levels occasionally exceed safe thresholds, hitting the urban poor hardest. Seasonal factors – including transport dust and winter household heating – also influence pollution levels. Evidence from Covid-19 lockdowns shows that reductions in vehicle activity led to noticeable drops in NO_2, highlighting the role of transport in urban air pollution.

Georgia has made considerable progress in the past decade in monitoring and addressing air pollution. The country has revised its air quality legislation to comply with the 2014 EU Association Agreement[17] and the 2008 EU Ambient Air Quality Directive,[18] including pollutant emission limits shown in the table below.

[16] The share of ambient air pollutants attributed to road transport outside of Georgia's cities is generally lower (except along heavily trafficked roadways) and varies by pollutant. According to the 2025 National Emission Inventory of Georgia, transport accounts for 6% of total particulate matter (PM), 44% of nitrogen oxides (Nox) and 49% of carbon monoxide (CO) emissions, at a national level. The share of nitrogen dioxide (NO_2) attributable to road vehicles is well above 44% in cities. In the winter, household heating is a major source of PM and NO_2, including in both rural and urban areas. In many rural areas, most air pollution comes from industry, agriculture and coal-fired power generation.

[17] Chapter 3 of the EU Association Agreement deals with environmental policy. Article 302 of the chapter stipulates that "cooperation shall aim at preserving, protecting, improving and rehabilitating the quality of the environment […] including […] air quality."

[18] In November 2024, the EU Air Quality Directive was recast as EC 2024/2881.

Pollutant level thresholds from the EU Air Quality Directive (2008/50/EC)

Pollutant	Averaging period	Limit / target value	Permitted exceedances
Sulphur Dioxide (SO_2)	1 hour (h)	350 µg/m³	Max 24 times per year
	24 h	125 µg/m³	Max 3 times per year
Nitrogen Dioxide (NO_2)	1 h	200 µg/m³	Max 18 times per year
	1 year	40 µg/m³	None
PM_{10}	24 h	50 µg/m³	Max 35 times per year
	1 year	40 µg/m³	None
$PM_{2.5}$	1 year	25 µg/m³ (limit)	None
	1 year	Exposure-reduction target	Based on average exposure
Lead (Pb)	1 year	0.5 µg/m³	None
Benzene	1 year	5 µg/m³	None
Carbon Monoxide (CO)	Max daily 8h mean	10 mg/m³	None
Ozone (O_3)	Max daily 8h mean (target)	120 µg/m³	Max 25 days per year (average over 3 years)
	Max daily 8h mean (objective)	120 µg/m³	Long-term goal

Notes: µg/m³ = micrograms per cubic metre

Source: European Commission (2008), Directive 2008/50/EC of the European Parliament and of the Council of 21 May 2008 on ambient air quality and cleaner air for Europe (accessed 22 August 2025).

Key legislative changes cover technical regulations, measurement protocols, public reporting (via air.gov.ge) and industrial emissions reporting. Challenges persist in monitoring and enforcement, owing to limited digital equipment and the selective use of air filtration during site inspections.

An electronic platform documents stationary sources and annual emissions (emoe.gov.ge), and an interactive, public-facing portal provides real-time updated information on air quality and other environmental indicators (map.emoe.gov.ge). The law requires classifying "zones and agglomerations" for air quality monitoring and requires those who exceed limits to develop emission-reduction plans. In 2021, MEPA identified monitoring zones and drew up remediation plans for Tbilisi and Rustavi, but implementation has been delayed by legislative changes and scheduling conflicts.

Air quality monitoring and mitigation plans were updated for the Tbilisi Agglomeration (2024-2026) and for the central zone that includes Rustavi (2023-2025). A new plan was also developed for the Black Sea zone that includes

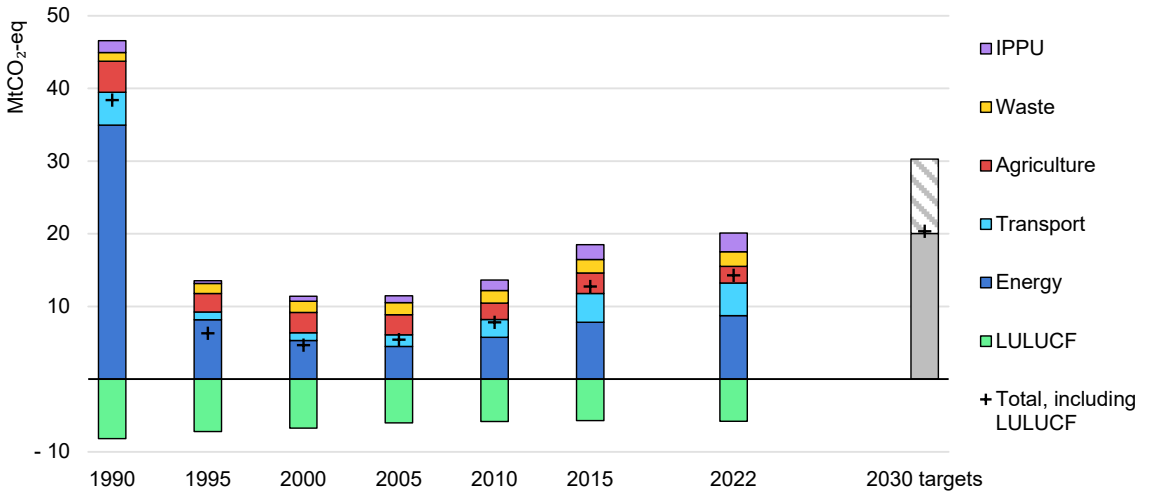
Batumi. In all cases, efforts concentrate on the transport sector, particularly in Tbilisi and the Black Sea zone.

Transport emissions now exceed 40% of Georgia's energy-related CO_2, with growth outpacing all other sectors

Carbon dioxide emissions from Georgia's transport sector have risen almost fivefold since 2000, driving nearly 60% of the increase in national CO_2 through 2023, and bringing the sector's share of direct fuel-combustion emissions to 42%.

Georgia's 2024 National Energy and Climate Plan (NECP) commits unconditionally to cutting total GHG emissions – including land use, land-use change and forestry (LULUCF) – by 35% from 1990 levels by 2030, a target that aligns with Energy Community accession. The NECP also includes a commitment – conditional on international support – to reducing emissions between 50% and 57% from 1990 levels over the same period. In recent years, the energy sector has accounted for 60% to 65% of GHG emissions (excluding LULUCF), with transport responsible for roughly 40% to 45% of that.

Georgia's GHG emissions, 1990-2022, and 2030 targets under the Paris Agreement



Notes: $MtCO_2$-eq = million tonnes of carbon dioxide-equivalent. The 2030 targets refer to GHG reductions included in the 2021 NDC (grey column), i.e. 35% below 1990 GHG level (57% with support). Total including LULUCF refers to commitments expected in the 2025 NDC update. IPPU = industrial processes and product applications. LULUCF = land use, land-use change and forestry.

Source: GEF, MEPA, and UNDP (2024), National Greenhouse Gas Inventory Document (accessed September 2025).

Georgia's draft 2025 NDC update sets a new conditional 47% reduction in GHG emissions as compared with a 1990 baseline. Neither document contains a separate sub-target for GHG emissions from the transport sector, but two measures included in the 2025 draft NDC update are relevant to transport:

- Increase renewables' share in electricity generation to 87% (from 75-80%).
- Ensure hybrids and EVs make up at least 25% of the vehicle fleet.

It is unclear if these steps will suffice to meet the 2030 target. As this deadline approaches, Georgia must also set 2035 targets that balance the urgency of cutting emissions with what is realistically achievable, coordinating long-term planning across government, business and civil society.

Congestion in Georgia's capital wastes time equivalent to around 3% of the city's GDP

Car ownership has surged in Georgia's capital, Tbilisi, worsening traffic, especially at peak hours. This is despite lower per capita car ownership than in many Western European capitals, suggesting that smarter road design, integrated transport planning and intelligent systems could help ease congestion.

Expanding road capacity is counterproductive. Building roads makes them more attractive to users who did not previously drive. Combined with naturally rising shares of car ownership, any added capacity is quickly absorbed. The term used to describe this well-documented phenomenon is "induced demand": Short-term improvements tend to encourage more car use, entrenching new travel habits and discouraging use of alternative modes, until congestion returns – or even worsens – further increasing travel times.

The economic costs of congestion stem mainly from lost time, which reduces productivity and raises costs for individuals and businesses. Travel-time values are typically estimated as fractions of average income or GDP per capita, adjusted by trip type, mode and context. Assuming economic valuation ratios[19] for different trip types, modes and traffic conditions from European valuation studies, and using the 2021 average gross wage in Tbilisi – GEL 7.50 (USD 2.80) per hour – and current mode shares of 30% car and 30% bus,[20] Tbilisi residents spent an estimated 221 hours in cars and buses, on average, in 2021.

[19] Different ratios to gross wages are assigned to travel time for different purposes (e.g. business travel, commuting, etc.), spent in different modes (e.g. rail, bus, metro, airplane or private car) and contexts (e.g. peak vs. off-peak, in congested traffic, or waiting for a bus or train). Economic impacts also reflect the variability in expected travel times and lateness. Theoretical justification for the ratios used comes from so-called "willingness-to-pay" studies, where individuals estimate how much they would pay to avoid different travel options.

[20] Modal shares are from the 2016 Tbilisi household survey, as citied in the AIIB Tbilisi Metro Modernisation Project. Modal shares are estimated as 39% public transport (of which, 9% was assumed to be in metro and cable cars), 30% private cars, 3% taxis, <1% biking, 27% walking and 1% other.

Value of time-based cost estimates of congestion for vehicular travel in Tbilisi

Mode	Context	Ratio to gross labour cost	Assumed share	Hours / day	Mode share
Car commute	Urban free flow	41%	50%	0.42	30%
	Urban congested	58%	50%		
Car other	Urban free flow	36%	75%	0.50	
	Urban congested	51%	25%		
	Intercity free flow	50%	--	--	
Bus commute	Urban	31%	100%	0.42	30%
Bus other	Intercity	289%	100%	0.50	

Note: Hours per day are weighted by the share of the population commuting/travelling, and include both weekdays and weekends. Other categories of travel, including business trips made by car and by train, are assumed to represent small shares of overall car traffic in Tbilisi and hence are not considered in the analysis.

This translates to about GEL 1 670 (USD 620) per person annually. Citywide, the inflation-adjusted cost totals GEL 1.8 billion (USD 670 million), or roughly 3% of Tbilisi's GDP – consistent with other congested capitals. These losses highlight the urgency of tackling congestion through infrastructure upgrades, stronger public transport and smart traffic management.

Georgian roads are getting safer, but the fatality rate is still twice the EU average

In 2017, a stricter license-point system, with deductions for infractions from the basis of 100 points, was also introduced. In the same year, Georgia also mandated the use of speed governors on minibuses, buses and trucks. Vehicles operating abroad were required to comply in 2018, while those used only domestically were only required to meet the standards from September 2020. These regulations, along with mandatory and more frequent roadworthiness checks, helped cut fatalities from 13.9 deaths per 100 000 people in 2017 to 11.7 in 2024. Yet the rate remains more than double the EU average of 4.4 deaths per 100 000, and is also twice the average among members of the United Nations Economic Commission for Europe (UNECE), a group that includes developing and emerging countries.

Tbilisi's road redesigns show how safety measures can also improve efficiency and cut emissions. Lower highway speed limits and smoother city traffic bring benefits across all three goals. Key urban options include:

- Smart traffic management (with speed enforcement and improved flow systems)
- Safer road design (separated bike lanes, at-grade crosswalks with signals instead of underpasses, and complete streets)[21]

Clear signage, context-appropriate traffic rules and strong enforcement remain essential everywhere – in cities, on highways and in Georgia's towns and villages.

Georgia developed a National Road Safety Strategy 2022-2025, which was approved in mid-2022.[22] The strategy includes measures to improve road safety management and vehicle standards, driver and road-user behaviour, as well as post-accident response, while more broadly aiming to develop safer roads. It incorporates procedures for implementation, monitoring and evaluation, as well as public communication, with a summary report to be developed in 2025.

A Road Safety Action Plan 2024-2025 was adopted by the government of Georgia in May 2025. It states further education on the dangers of drunk driving and the importance of seat belts; identifying and redesigning dangerous roads and intersections; lowering speed limits in urban areas and on highways; tightening the tolerance on speed governors from 15 kilometres per hour to between 3-5 kilometres per hour; and introducing periodic technical inspections for motorcycles. The UNECE further recommends the creation of a national lead agency and an inter-agency commission for road safety.

Sustainable transport planning must prioritise equity and accessibility

Recent political and policy reversals in several democracies highlight the need for climate, energy and transport policies that explicitly consider disadvantaged groups – including those likely to support parties that later roll them back.

Sustainable transport is no exception. Higher taxes on vehicles or fuels, stricter inspections and incentives for low-emissions alternatives (like EVs) must spread benefits widely and deliver visible gains, even within short electoral cycles. Near-term rules should target high-value use cases such as government or commercial fleets. When applied broadly (such as fuel efficiency or emissions standards), they should form part of policy packages that compensate lower-income groups or give them affordable alternatives. Examples include "right to plug" laws in five EU

[21] Complete streets are urban roadways designed and operated to safely and efficiently accommodate all users – including all ages, levels of mobility and modes of transportation. The approach aims to ensure that pedestrians, bicyclists, motorists and public transit riders can travel comfortably and securely on the same corridor. Complete streets integrate features such as sidewalks, bike lanes, accessible crossings, bus lanes, safe medians and adequate lighting. Rather than prioritising cars, the concept promotes equitable access, sustainability and health.

[22] The Strategy was developed in accordance with international standards and recommendations from the UNECE and the WHO. The strategy aligns with the EU Association Agreement, and its principles are consistent with the Road Safety declaration of the West Balkans, which was endorsed by the UN and WHO.

states, France's "social leasing" program, and a growing number of national and subnational EV subsidies with income or price caps, such as the US Inflation Reduction Act, France's *Bonus Écologique* and Germany's buyer's premium, as well as purchase incentives for second-hand EVs.

Public input is vital. National- and city-level policies should be conceived with civil society inputs and should undergo periods of public comment. This has not always been the case in Georgia, where municipal transport plans have often catered to demands of international financial institutions, rather than local constituencies. The latest example of this is the Tbilisi Transport Plan, which is only available in English, and which relies on technical studies that have not been made publicly available. At the same time, public recourse and inputs into energy and transport projects must be weighed against the risk of key projects being blocked by small yet powerful constituencies, including through administrative hurdles and legal tactics such as environmental reviews.

The Avoid-Shift-Improve (ASI) framework

The Avoid-Shift-Improve (ASI) framework has guided sustainable transport policy for more than a decade. It prioritises avoiding trips on carbon-intensive modes, then shifting to lower-carbon modes, and only afterwards improving vehicle and fuel efficiency.

Advocates argue that "avoid" measures such as compact urban design, mixed-use development, local access to goods and services, and higher driving costs deliver the most cost-effective and meaningful emissions cuts. Next come modal "shifts:" reducing private vehicle use while expanding public transport, shared mobility, micromobility and active modes. For goods transport, this means shifting to waterborne freight, electrified rail/road cargo movements and cargo bikes. Only once these levers are tapped should more expensive technology fixes be used. This hierarchy is seen as most effective for cutting emissions, easing congestion, improving air quality and enhancing access and safety.

Yet the framework's rigidity raises questions. Effectiveness varies depending on the built environment, and across socio-economic and cultural contexts. Moreover, the distinction between ASI measures is not always clear. Vehicle efficiency and fuel measures often dominate budgets and NDCs, sidelining avoid or shift options. Political resistance to raising driving costs and mixed results in behaviour-change policies further challenge the hierarchy.

Meanwhile, plunging battery costs make EVs a powerful, affordable mitigation tool, especially for buses, trucks, cargo bikes and shared fleets. Most concerningly, the "either-or" framing of ASI measures versus road transport electrification has fuelled polarised debates – particularly in Global South countries – between EV advocates

and proponents of urban design and public transit. To effectively improve transport and reduce emissions in cities across the Global South, it is crucial that these communities join forces and recognise the substantial overlap in ASI and electrification opportunities, strategies and goals.

National framework

Highlights

- Sustainable transport policy and planning is a complex process, covering fossil and renewable energy supply, fuel choices, infrastructure development, land use and zoning, as well as environmental and emissions impacts. Responsibility for these areas is spread across multiple ministries and departments, with powers divided between national and municipal levels.
- EU association and Energy Community commitments have led to technical, safety and emissions regulations that have made Georgia's roads safer and its vehicles less polluting and more fuel-efficient.
- Recent energy and climate planning and strategy documents focus on the importance of reducing fuel consumption of road vehicles, and improving the efficiency of transport systems across road, rail, shipping and aviation.
- In August 2023, the Georgian government launched the Interdepartmental Commission for the Development of the Transport and Logistics Sector. The Commission fills a long-standing gap in governance, providing Georgia with its first formal mechanism to ensure coherent, coordinated and forward-looking transport policy across all levels of government.
- Coordination, transparency and trust among national, regional and municipal levels – as well as between government, industry, research and academic, NGOs and civil society – will be critical for Georgia to advance transport and energy outcomes and achieve its economic, social and environmental goals.
- Georgia's National Statistics Office (Geostat) and Ministry of Environment and Agriculture (MEPA) maintain and disseminate data portals that are models in the South Caucasus. Opportunities to build upon these platforms and improve data quality should focus on improving the accuracy and fidelity of data on vehicle imports and the in-use fleet, including vehicle and passenger/cargo activity.
- International organisations have played a major role in financing and informing policy and technical development of sustainable transport policy and projects. These include international finance institutions, multilateral development banks, and intergovernmental organisations, and bilateral development and aid organisations.
- Georgia can continue to benefit from these organisations while also aiming to develop fiscal policies that ensure public revenues are sufficient and sustainable to finance public priorities.

This section reviews the roles of Georgian ministries in transport policy, the support of international organisations in financing and technical assistance, and the expertise of regional and domestic NGOs. It highlights progress in vehicle regulation, which has improved safety, efficiency and emissions. Fiscal reforms in 2017 boosted hybrid and EV registrations, laying the basis for cleaner fleets. Fuel tax increases, however, lag inflation. Clear communication, fair revenue use and equity measures could strengthen support for gradual tax adjustments.

National government institutions

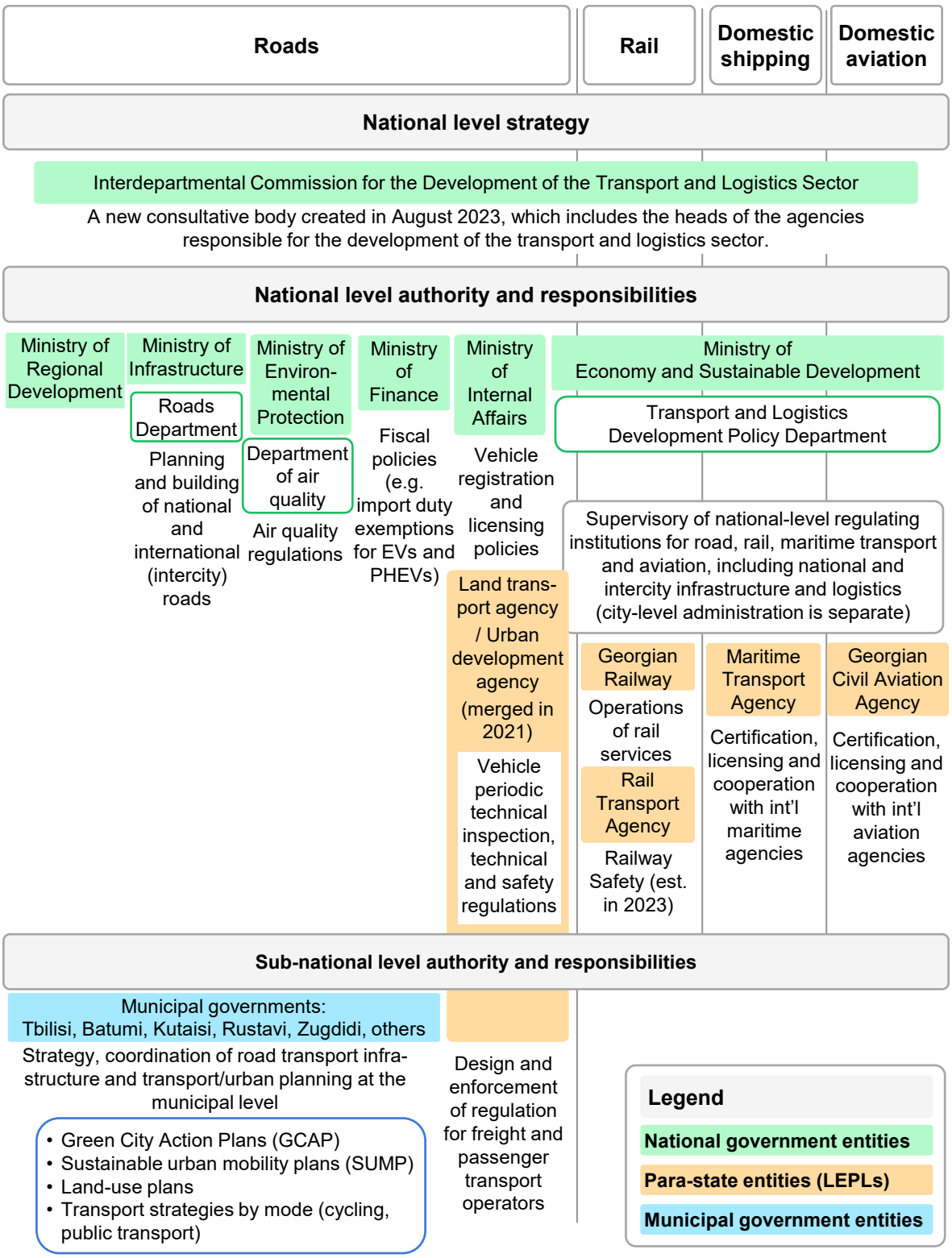
Sustainable transport policy and planning in Georgia is a complex process, covering fossil and renewable energy supply, fuel choices, infrastructure development, land use and zoning, as well as environmental and emissions impacts. Oversight responsibility is spread across multiple ministries and departments and is also split between national and municipal authorities.

To advance climate goals under the United Nations Framework Convention on Climate Change (UNFCCC), the government established the Climate Change Council in 2020 and clarified ministerial responsibilities for climate policy, led by the Ministry of Environmental Protection and Agriculture (MEPA). Until recently, however, no single body had coordinated a comprehensive sustainable transport strategy.

This changed in August 2023, when the government launched the Interdepartmental Commission for the Development of the Transport and Logistics Sector. Bringing together heads of relevant ministries, the commission is tasked with aligning policies across national, regional and city levels so they reinforce one another. It must meet at least twice a year. The Ministry of Economy and Sustainable Development (MoESD) also plans to create working groups with private sector actors and industry associations to tackle sectoral issues and advise on policy.

The creation of this commission fills a long-standing gap in governance, providing Georgia with its first formal mechanism for ensuring coherent, coordinated and forward-looking transport policy across all levels of government.

Governance of the transport sector in Georgia



The **Ministry of Economy and Sustainable Development (MoESD)** formulates energy and transport policy. Key units include the Energy Efficiency and Renewable Energy Policy Department, the Transport Department (responsible for national transport planning and technical regulations), and the Spatial and Urban Development Agency (urban planning). The Land Transport Agency – a legal entity of public law (LEPL)[23] within MoESD – is the competent authority for technical and safety regulations.

The **Ministry of Environmental Protection and Agriculture (MEPA)** leads national climate policy, including Nationally Determined Contributions (NDC) reporting to the UNFCCC and issuing environmental permits for energy projects. Its Ambient Air Division defines and implements air quality policy, including developing fuel quality and vehicle emission standards. The National Environmental Agency – a legal entity of public law under MEPA – is responsible for ensuring compliance with vehicle emission standards (Euro 5/V), and administers an online, user-friendly portal monitoring real-time air quality. The Climate Change Division updates the Climate Strategy and Action Plan (CSAP) every three to five years. Transport was named a priority sector in the 2020 CSAP. At the municipal level, MEPA and MoESD jointly coordinate the Covenant of Mayors' activities on climate, energy and air quality.

The **Ministry of Regional Development Infrastructure (MRDI)** was split in April 2025 into two ministries, redistributing existing staff. The **Ministry of Regional Development (MRD)** integrates the Department for Regional Relations of the Government Administration and the Coordinating Council for the Strategic Development of Mountain Regions. The MRD allocates and administers local and regional government budgets and administers regional relations. The **Ministry of Infrastructure (MI)** oversees national and regional road, water, building and solid waste projects. Its Roads Department oversees road renovation and new construction projects of domestic and international importance, including projects currently underway on the East-West Highway.

The **National Statistics Office (Geostat)** compiles energy and transport statistics critical for policy making, including:

- An interactive energy balance portal, added in June 2025
- Fuel import/export data (value and mass), as an annual time series from 2012

[23] In Georgia, a Legal Entity of Public Law (LEPL) is a special type of organisation established by legislation (or a government decree) to carry out public functions, but with more operational and financial independence than a standard government department. They function as quasi-governmental organisations or para-state entities.

- Vehicle statistics, including registrations, fuel use, accidents and fleet age[24]
- Passenger and freight activity (passenger- and tonne-kilometres, by mode, 2000-2023)[25]
- National time use surveys, including the most recent survey from 2020-2021
- A GIS database of common use roads, as an annual time series from 2011

Geostat also conducts household energy surveys, most recently in 2022.

The **Georgian National Energy and Water Supply Regulatory Commission (GNERC)** regulates electricity and water, licenses market participants, certifies the transmission operator, Georgian State Electrosystem (GSE) according to EU standards, and has been monitoring the liberalised electricity market since reforms were introduced in 2021.

The **Georgian Oil and Gas Corporation (GOGC)** operates the gas pipeline system, manages transboundary oil and gas flows, and develops gas-fired power plants.

The **Public-Private Partnership (PPP) Agency**, established in 2018, develops and implements PPP projects.

Other stakeholders

International development programmes, financial institutions and NGOs provide vital funding, financing and technical assistance for Georgia's transport and energy infrastructure. Major international financial institutions, including the World Bank, European Investment Bank (EIB), the European Bank for Reconstruction and Development (EBRD), and the Asian Development Bank (ADB), are central to transport financing. Active UN bodies include the United Nations Development Programme (UNDP), the United Nations Environment Programme (UNEP) and the United Nations Economic Commission for Europe (UNECE). Bilateral partners such as Germany's Gesellschaft für Internationale Zusammenarbeit (GIZ), the United States Agency for International Development (USAID), France's Agence Française de Développement (AFD) and the Swedish International Development Cooperation (SIDA) also contribute.

[24] Geostat also provides estimates of the vehicle fleet age profile. However, this includes many private vehicles that have not be removed from the registry, despite no longer operating on Georgian roads. Detailed data on vehicle registrations, giving model-level records of all annual new and used vehicle imports and on the registered fleet, is collected and made available (in Georgian) by the Ministry of Internal Affairs and Public Information.

[25] Geostat data on freight activity is inaccurate and requires updating. It is not plausible that freight movements by rail in 2022 were more than five times greater than by road, or that air freight exceeded road movements by 70%. The inaccuracy of these data has been corroborated by interviews with Georgian experts.

Regional NGOs, including REMISSIA, the Caucasus Environmental NGO Network (CENN), and the Tbilisi-based World Experience for Georgia (WEG), add sector expertise and local knowledge of political, administrative and cultural contexts.

A decade of reforms has made Georgia's vehicles safer, cleaner and more efficient

Following post-Soviet deregulation, fleets expanded rapidly. In the absence of regulation, standards of road safety declined and emissions increased. The country's commitments under the EU Association Agreement and Energy Community obligations have since prompted improvements.

Key milestones include:

- **EU Directive 2009/45/EC**: Mandatory technical inspections introduced nationwide in 2018-2019 for all vehicles
- **EU Regulation 1222/2009**: Tyre labelling requirements, requiring information on fuel efficiency and other parameters by 2021
- **EU Directive 2011/92/EU**: Environmental impact assessments for major projects, encouraging efficiency and public transport[26]
- **Directive 2009/33/EC** (required for membership in the Energy Community): Requirement that public vehicle procurement consider pollutant and CO_2 emissions as well as lifetime costs (from 2017)

In 2015, Georgia joined the UNECE 1958 Agreement on harmonised vehicle regulations. With UNECE and Romanian support, a five-to-seven-year plan for vehicle type approval was drafted in 2019, aiming to align with international safety and technical standards and ease vehicle and components trade. This plan culminated in the 2023 approval of technical standards for type approval by the Georgian government.

Georgia has also joined 18 other UN technical regulations relating to road safety, traffic control and technical standards. The Transport Department (MoESD) oversees implementation, while the Land Transport Agency is the competent authority for vehicle and parts type approval regulations.

Mandatory periodic technical inspections are improving road safety and reducing emissions. Since 2019, Georgia has fully implemented periodic technical inspections in line with EU legislation.[27] Vehicles under four years old

[26] In theory, transposition of this directive could lead to greater scrutiny of major road projects, putting the onus on project developers to demonstrate greater efficiency of traffic movement, and to incorporate measures to promote public transport and optimise vehicle circulation.
[27] These include tailpipe emissions limits that have been made more stringent; maximum CO shares in exhaust have been lowered from 0.55% to 0.3% at idle and from 0.45% to 0.3% at high speed.

are exempt; those between four and eight years old require biennial inspections; and those older than eight years need annual checks. Inspections have removed unsafe and polluting vehicles, helping cut traffic deaths and emissions.

By 2019, more than 40 inspection centres and 80 lines[28] were operational, supported by smart cameras. Around 40 000 fines were issued for non-compliance. In 2023, emissions limits were tightened, camera deployment was expanded, and fines were increased to meet 2024 targets.

Authorities expected about 10% of cars and 7% of minibuses/buses to fail inspections outright, and another 20% or more to need repairs. The share of older vehicles (over 20 years) in the on-road fleet was projected to shrink from 30% to 20%. Official data show cars older than 10 years fell from 89% (2017) to 82% (2023), though inactive vehicles skew the numbers.[29]

Annual circulation taxes are a common instrument that helps to incentivise owners of vehicles that are no longer roadworthy or not driven to deregister and scrap their vehicle. They also ensure that the in-use vehicle fleet can be tracked with some accuracy. Unlike many countries, Georgia lacks circulation or property taxes that would help track fleet age and incentivise deregistration. However, from 2018, a limited vehicle ownership tax applies to high-income households only (above GEL 40 000 annually).[30]

Mandating stricter vehicle emissions standards will cut pollutant emissions

From January 2024, all newly registered cars in Georgia must meet Euro 5/V standards, with buses and trucks required to meet Euro 5/V from 2025.[31]

The rules are backed by a ban on catalytic converter exports, in-use enforcement of vehicles with visible emissions using smart cameras in Georgia's four largest cities, and higher fines for evading mandatory technical inspections from 2023. The 2024 NECP (Measure EE-19) projects fuel efficiency gains of 20% (light-duty vehicles) and 10% (heavy-duty vehicles i.e. buses and trucks) by 2030, rising to 40% and 30% by 2040 as the Euro 5/V fleet expands.

[28] A technical inspection centre may contain one or many lines, each of which is a complete set of equipment and instruments that can be used to test a vehicle as it passes through sequential stages of an inspection.
[29] Inactive vehicles are only removed from the registry in the case of corporate fleets, or when private individuals sell them for scrap or export, meaning that many vehicles that no longer circulate on Georgian roads are still likely registered as belonging to the fleet.
[30] The 2018 law requires households with an annual income exceeding GEL 40 000 (around USD 15 000) to pay a tax on vehicles that they own (between 0.02% and 0.05% of the vehicle's total value, for households with an income between GEL 40 000 and 100 000; or 0.8% to 1.0% for households with income exceeding GEL 100 000).
[31] A grant from the United Nations Environmental Programme (UNEP) supported the cost-benefit analysis study and implementation of these standards.

Fuel quality requirements accompany these standards, since sulphur and other impurities compromise the efficiency and lifetime of emission control technologies. Regulation of fuel import, production and sale began in 2000. Limits on lead, benzol, arenes and sulphur were introduced in 2004 and have been progressively tightened since. Diesel sulphur limits fell from 200 parts per million (ppm) in 2010 to 10 ppm in 2023. Euro 5/V fuel standards now apply, but inspections revealed violations at small stations, prompting an increase in the fine from GEL 8 000 to GEL 20 000 (roughly USD 3 000 to USD 7 400), plus volume-based penalties.

Currently, meeting Euro 6/VI standards would require fuel imports from the European Union or Azerbaijan, which would lead to higher prices. A planned Black Sea refinery could instead enable domestic production of fuels compatible with Euro 6/VI, and potentially even Euro 7 compatible fuels.

Recent tax policies promote imports of EVs and hybrids

In November 2017, the Georgian parliament exempted all light- and heavy-duty EVs from import excise duties, electric minibuses and buses from value-added tax (VAT), and EV company cars from income tax. EVs also receive a 20% discount on technical inspections. Excise taxes were cut for hybrids: by 50% for vehicles over six years old and by 60% for newer ones. These measures boosted the share of new hybrid registrations from 5.5% in 2016 to between 19% and 43% annually during 2017-2023. EV registrations are also rising, reaching 1.5% of new cars in 2023.

The definition of “hybrid” is vague. Mild hybrids and extended-range EVs – and even cars that have only start/stop engine functionality, and no regenerative braking – can benefit from exemptions despite limited efficiency gains. This was more problematic early on, but has not hindered imports of “strong” hybrids since 2020. Popular imports now include the Toyota Prius, Honda Fit, Fiat 500 and Hyundai Elantra. Clearer definitions are needed in secondary legislation (e.g. minimum fuel efficiency by size or weight) and should be provided by the Transport Department of the MoESD, along with other relevant agencies.

The roadmap section of this report discusses opportunities to build upon the tighter tailpipe emissions and fuel quality regulations, as well as fiscal policies promoting hybrids and EVs, to accelerate EV adoption in high-impact use cases. It also highlights the need to shift from blanket tax exemptions to differentiated duties tied to vehicle efficiency and emissions.

Regulations and incentives on vehicle importers – the case of New Zealand

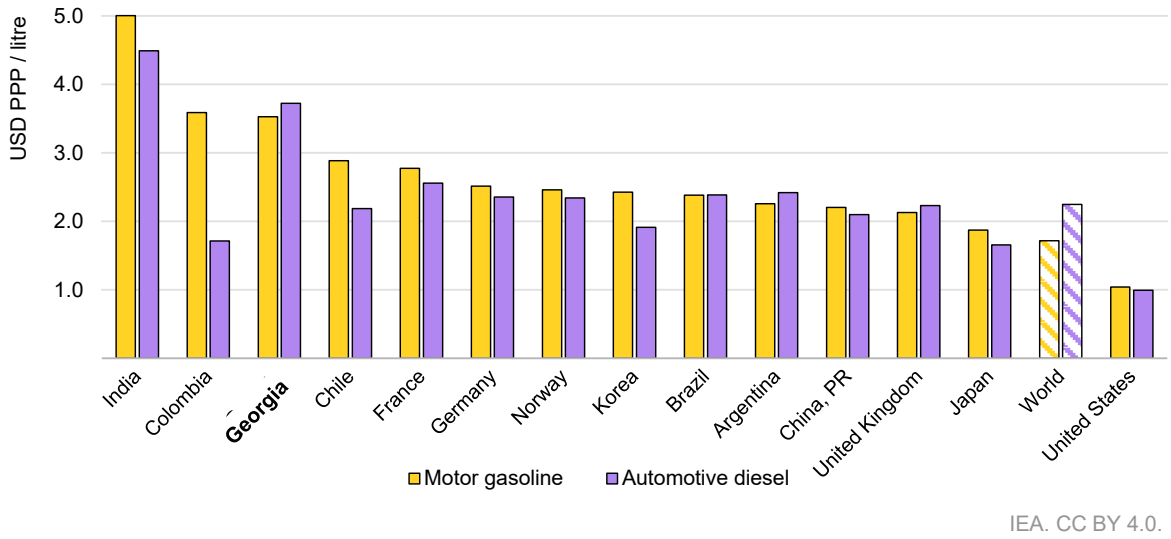
New Zealand offers an innovative example of import tariffs tied to environmental performance. Its Clean Car Standard, in effect since 2023, is the first regulation requiring importers to lower CO_2 emissions of vehicles entering the country. Importers must meet emission targets set through 2027, with increasing stringency, and face per-vehicle, per gramme of CO_2/km fines for non-compliance.

The standard was paired with the Clean Car Discount, a revenue-neutral "feebate" scheme that expanded earlier BEV and PHEV rebates. Different rebate/fee curves were applied to new and used vehicles, with used vehicle rates about half those of new ones. Although the Clean Car Discount was discontinued in late 2023, the combined approach remains the only case where regulatory and taxation mechanisms were coherently applied to both new and second-hand imports, targeting CO_2 reduction and the EV transition.

Fuel prices are close to the global average, while fuel tax increases have not kept pace with inflation

Automotive fuel prices spiked in 2022 after Russia's full-scale invasion of Ukraine, fell in 2023, then rose again sharply in 2024. In 2022, prices were close to the global average in absolute USD terms, but high on a purchasing power parity (PPP) basis.

Automotive gasoline and diesel prices in Georgia and other countries in USD PPP, 2024



IEA. CC BY 4.0.

Source: IEA (2025), Energy Prices (accessed 20 August 2025).

Fuel taxes in Georgia have not kept pace with inflation or income growth – as in many countries (including the United States and the European Union). From 2000-2024, GDP per capita grew by 6.1% per year on average, while gasoline prices rose in real terms by just 6.6% per year (i.e. slightly faster than real income) and diesel prices rose 2.4% per year (i.e. far slower than real income).

Recent tax adjustments have mainly targeted diesel. In 2021, excise taxes on gasoline and diesel raised about GEL 540 million (USD 200 million), while VAT generated a further GEL 640 million (USD 240 million) – roughly 9% of total federal revenue. By 2024, excise revenue rose to nearly GEL 600 million (USD 220 million). Gasoline tax accounts for 55% to 65% of these revenues, with most of the rest from diesel tax.

Excise taxes on automotive fuels and lubricants, 2023-2024

Fuel	Excise rate	Excise rate* in GEL/litre	Assumed density (kg/litre)	Assumed pump price (in GEL/litre)	Estimated VAT (GEL/litre)**
Gasoline	GEL 500/tonne	0.37	0.74	3.1	0.56
Diesel	GEL 400/tonne	0.336	0.84	3.3	0.59
Lubricants	GEL 800/tonne	0.696	0.87	--	--
CNG	GEL 200/ 100 m^3	0.36 per kg	180 kg/m^3	GEL 1.60/kg	GEL 0.29/kg
LPG	GEL 300/tonne	0.165	0.55	1.8	0.32
Biodiesel***	GEL 150/tonne	0.132	0.88	--	--

*Excise rates are calculated based on the fuel densities assumed in column four.
** VAT is calculated as 18% of the 2024 average prices reported by the National Statistics Office of Georgia (Geostat, 2025).
***Biodiesel and mixtures thereof, not containing or containing less than 70% by weight of petroleum oils or oils obtained from bituminous minerals.
Source: Tax Code of Georgia, Article 188, 2023.

Policies and plans

This section summarises recent policy and strategy documents, outlining the status and future priorities in transport and energy. It focuses on the following key documents:

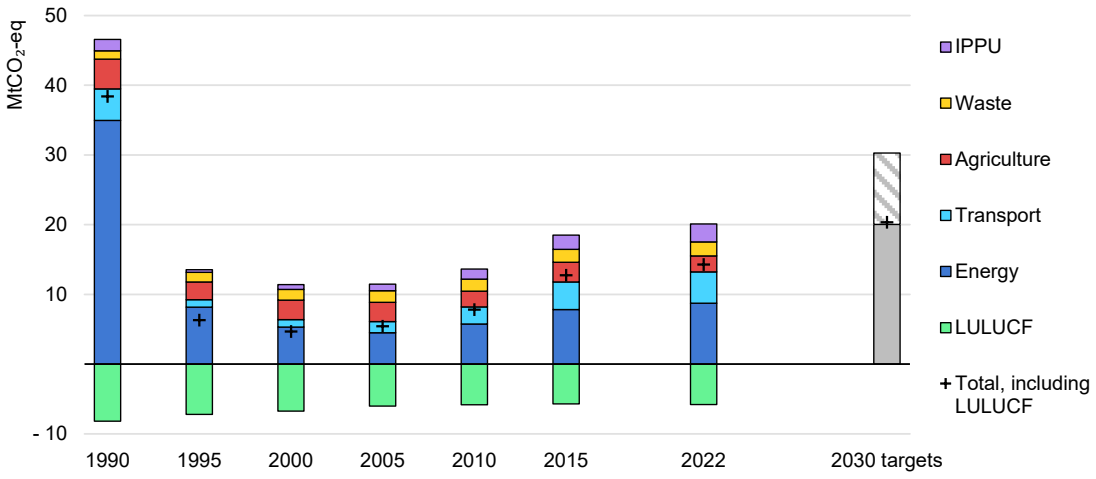
- Georgia's 2021 Nationally Determined Contribution (2021 NDC)
- The 2023 Long-Term Low-Emission Development Strategy (LT LEDS)
- The 2023 National Transport and Logistics Strategy (NTLS)
- The 2024 National Energy Policy (NEP)
- The 2024 National Energy and Climate Plan (NECP)
- The MEPA's 2021-2023 and 2024-2025 Climate Action Plans

- Georgia's 2024 Fifth National Communication to the United Nations Framework Convention on Climate Change
- The MoESD's 2025 draft updates to the Renewable Energy Law

Georgia's 2021 Nationally Determined Contribution (NDC)

In its 2021 NDC, Georgia pledged under its unconditional contribution to cut greenhouse gas emissions by 35% from 1990 levels[32] (including those from land use, land-use change and forestry, or LULUCF)[33] by 2030. Its conditional contribution goes further – pledging to cut emissions by 50% to 57% from 1990 level, with the main condition being to receive international support. Recent emissions are already well below 1990 levels: In 2022 they were already far less than half (37%) the 1990 level (including LULUCF). The 2021 NDC submission includes a Climate Strategy and Action Plan (CSAP) outlining mitigation measures for 2021-2030. The 2021-2023 CSAP and 2024-2025 update are both summarised below.[34]

Georgia's GHG emissions, 1990-2022, and 2030 reduction targets under the Paris Agreement



Notes: $MtCO_2$-eq = million tonnes of carbon dioxide-equivalent. The 2030 targets refer to GHG reductions included in the 2021 NDC (grey column), i.e. 35% below 1990 GHG level (57% with support). Total including LULUCF refers to commitments expected in the 2025 NDC update. IPPU = industrial processes and product applications. LULUCF = land use, land-use change and forestry

Source: GEF, MEPA, and UNDP (2024), National Greenhouse Gas Inventory Document (accessed September 2025).

[32] The 1990 greenhouse gas (GHG) inventory was re-estimated after Georgia started applying higher-tier methods to certain sectors. Energy and transport emissions continue to be estimated using Tier 2 methods (local activity data with conversion factors from state, national or international references), while Tier 3 methods (local activity data and either locally sourced or specific CO_2 emissions data) are adopted for the chemical industry emissions and for some other sectors (e.g. minerals).

[33] Georgia's forests, which cover around 40% of the country, are a substantial net carbon sink, accounting for around 32% of total non-LULUCF emissions, in 2020. Georgia is committed to protecting and expanding the mitigation (with GHG capture capacity expected to increase by 10% by 2030) and adaptive capacities of these national resources.

[34] The 2021 NDC, Climate Strategy 2030, and 2021-2023 Action Plan were approved by Georgia's new Climate Change Council, which oversees climate policy. According to the UNFCCC protocol, future NDCs, NECPs, and CSAPs will be updated every two to three years.

The 2025 draft NDC update is expected to set a new conditional target: 47% below 1990 levels by 2030, including all sources and LULUCF.

Two strengthened targets announced in the 2025 draft NDC update are relevant to limiting transport emissions:

- Increase renewables' share in electricity generation to 87% by 2030 (from 75% to 80% in recent years)
- Ensure hybrids and EVs make up at least 25% of the vehicle fleet by 2030

The Long-Term Low-Emission Development Strategy (LT-LEDS)

Georgia's LT-LEDS guides climate action and will be complemented by a shorter-term, 10-year LEDS that is aligned with the updated NDC and climate action plans. It also frames sectoral policy planning.

The strategy identifies mitigation measures and projects GHG emissions to 2050 under six scenarios, assessing the possibility of climate neutrality and additional mitigation priorities.

Following consultations with the Energy Community, the European Commission and the Georgian government, the LT-LEDS set the new 2030 GHG reduction target at 47% below 1990 levels (including LULUCF). This target was included in the Energy Community Governance Regulation in 2022 and was included as a conditional goal in Georgia's 2025 draft update NDC. As an Annex 2 UNFCCC signatory, Georgia's conditional commitments depend on technical capacity and support from multilateral institutions.

The 2025 NDC draft, originally targeted for October 2024, for the first time incorporated input from business associations, sectoral and thematic working groups, experts and civil society.

The National Transport and Logistics Strategy

Developed by the MoESD Transport Department with World Bank support, the strategy aims to strengthen Georgia's role as a regional logistics hub and to further develop rail transport as a safe, environmentally friendly and competitive alternative to road. It assesses the capacity of ports, rail, road and airports, identifies gaps, projects infrastructure needs, and sets strategic goals with a near-term action plan.

Approved by Prime Minister Irakli Garibashvili in August 2023, the strategy also established the Interdepartmental Commission for the Development of the Transport and Logistics Sector of Georgia. Key objectives include improving

transport safety, raising industry standards and exploring a high-speed rail link with neighbouring countries.

Major infrastructure targets include constructing 760 kilometres of new highways by 2030, completing railway modernisation by 2025, and enhancing accessibility to transport networks. The strategy supports regional connectivity, trade and sustainable economic growth, aligning with Georgia's broader development vision.

National Energy Policy

The National Energy Policy, approved by parliament in June 2024, focuses on diversification, resilience and investment in both renewable and fossil energy. It emphasises continuing market reforms, strengthening regional energy trade, and cooperating with the Continental Europe Synchronous Area of the European Network of Transmission System Operators for Electricity (ENTSO-E). Ongoing electricity sector reforms and planned investments in generation, transmission and distribution will support a grid capable of handling increasing EV deployment.

Integrated National Energy and Climate Plan (NECP)

The NECP charts how current investments and policies can help Georgia deliver on 2030 targets aligned with European Union and Energy Community objectives, the United Nations climate convention (UNFCCC) and Sustainable Development Goals (SDGs), focusing on emissions cuts, renewables and efficiency[35] as well as domestic and international grid interconnectivity.

Major past and planned investments target:

- Renewable energy (e.g. hydropower, biomass, solar, wind)
- Electricity system improvements
- Efficient and low-emissions vehicles (electric and hybrid imports, mandatory inspections)

Key electricity and transport strategies include solar, wind and hydro deployment; two new gas-fired power plants; smart meters (targeting 60% rollout by 2030); demand-side management; and energy storage via pumped hydro (aiming for 600 MW by 2031); batteries and hydrogen. Some NECP measures are underway or scheduled for 2026 in the 2024-2025 Climate Action Plan.

[35] The 2030 targets for greenhouse gas emissions, renewable energy and energy efficiency were set based on TIMES (The Integrated MARKAL-EFOM System) modelling. Four scenarios were developed: BAU (business-as-usual), NECP (National Energy and Climate Plan) and two alternatives.

The NECP also identifies additional priorities in buildings, industry, public transport, waste and forestry, which are included in the 2024-2025 Climate Action Plan.

Transport targets emphasise EV adoption and biofuels, with the latter shown in the table below.

Baseline (BAU) and NECP transport scenarios for 2030, 2040 and 2050

Indicators in TJ	2019	2030		2040		2050	
		BAU	NECP	BAU	NECP	BAU	NECP
Total final energy consumption in transport	58 784	106 899	66 222	142 670	81 099	185 452	96 960
Electricity consumption in road transport	14	1	774	11	2 487	346	5 753
Electricity consumption in rail	1 072	1 182	1 557	1 568	2 146	1 784	2 870
Consumption of biodiesel	5	-	523	-	1 415	-	2 731
Consumption of bioethanol	-	-	229	-	502	-	1 024
Total consumption of renewables	1 091	1 182	3 082	1 579	6 550	2 123	12 378
Share of renewable energy (actual)	**1.9%**	**1.1%**	**4.6%**	**1.1%**	**8.1%**	**1.2%**	**12.8%**
Share of renewable energy (with multipliers)	**2.9%**	**1.7%**	**10.5%**	**1.7%**	**21.0%**	**2.2%**	**35.9%**

Notes: BAU = business as usual. NECP = National Energy and Climate Plan. TJ = terajoules.

The electricity shares in road and rail, and advanced biofuels (listed in Annex IX of the EU RED II) reported in the original table (Table 2-3 of the Integrated NECP) were multiplied by the REDII credit targets (4x, 1.5x and 2x, respectively). In reproducing this table, these multipliers have been removed to report only final energy consumption, to derive the actual share of renewable energy in transport. The original shares are reproduced in the final row of this table. All numbers are rounded, and shares are rounded to the nearest tenth.

Source: MoESD (2024), Integrated National Energy and Climate Plan of Georgia.

The NECP also sets an efficiency objective (Objective 2.3 in the NECP) for transport, targeting a reduction in primary energy consumption. Measures proposed under this objective include:

- Higher fuel taxes
- Import incentives for EVs and hybrids
- Vehicle roadworthiness regulations
- Emissions standards (Euro 5/V), which have since been adopted
- Higher import taxes on older vehicles
- Improving public transport and promoting sustainable mobility in Tbilisi (including endorsing specific measures in Tbilisi's Green Transport Policy) and Batumi (including endorsing measures included in the city's Sustainable Urban Mobility Plan).

These initiatives, together with projects in the 2024-2025 Climate Action Plan, are endorsed and further elaborated as short- and medium-term priorities in the final roadmap section of this report.

The 2021-2023 and 2024-2025 Climate Action Plans

Georgia's Climate Strategy and Action Plans were developed collaboratively with national and subnational agencies, consultants and sector experts, as well as relevant public and private institutions. The 2021-2023 action plan included 13 transport initiatives. By the third quarter of 2024, seven of these had been completed, five were in progress, and one was still planned. The completed initiatives reduced transport emissions by an estimated 260 kilotonnes of carbon dioxide-equivalent (kt CO_2-eq) over three years, with total projected reductions by 2030 expected to reach nearly 1.75 megatonnes of carbon dioxide-equivalent (Mt CO_2-eq).

Both action plans prioritise projects aligned with Georgia's 2030 NDC targets, allocating funding from public revenue and international financial institutions. Project impacts are modelled using the Long-range Energy Alternatives Planning (LEAP) software tool, while budgets, timelines and completion targets are all tracked. While some solar photovoltaic (PV), wind and transmission targets have been delayed, they remain scheduled for completion by 2030.

Building on the 2021-2023 EV target of 5% by 2030, the 2024-2025 plan sets clearer goals: hybrids should reach 20% and EVs 5% of new private vehicle registrations by 2030, alongside targets for technical inspection pass rates. These EV adoption targets are conservative compared to historical EV uptake as well as the recommendations in this roadmap.

Technology adoption and emissions targets in the 2024-2025 Climate Action Plan

	2019	2022	2024	2026	2028	2030
EV share (%)	0.14	0.5	1.0	2	3	5
Hybrid share (%)	4.9	5.5	6.7	9.8	15	20
Share passing the first technical inspection (%)	45	46	50	55	60	70

Source: MoESD, GEF, and UNDP (2024), 2024-2025 Climate Action Plan.

Additional measures cover on-road fleet efficiency, new and used vehicle registrations, biofuels, urban transport planning, expanded public transport, fleet renewal, multimodal mobility and active transport (walking and cycling).

Transport efficiency and renewable energy targets in the 2024-2025 Climate Action Plan

Category	Description	Regional scope	Target completion
On-road fleet	Installation of 64 “smart cameras” that recognise license plates and can be used to screen for vehicles that are in violation of emissions control requirements	Major cities	2026
On-road fleet	Dispatch of a police crew equipped with a vehicle emissions measurement device, to enforce emissions standards	Poti, Zugdidi, Gori	2026
Vehicle registrations	Develop a cost-benefit analysis of the potential for additional tax incentives (beyond exemption of the import excise duty) on EV market penetration	National	2026
EV charging	Analysis to underpin recommendations on optimal locations and deployment of EV charging in cities and on highways	National	2026
Biofuels	Set up a database tracking Georgia’s biodiesel production and sales, and promote scale-up of domestic biodiesel production	Biodiesel Georgia LLC	2025
Public transport	Bus fleet upgrades (200 18-metre buses); metro modernisation (12 stations and 40 new metro cars); cable car construction (4 ropeways)	Tbilisi	2025
Traffic management	Five new intelligent traffic lights	Tbilisi	2025
Multimodality	Three new bicycle lanes and five new streets designed according to multimodal planning	Tbilisi	2025
Multimodality	Feasibility and needs studies for improving regional and local connectivity, including multimodal hubs at the Central Railway Station and Airport	Tbilisi	2025; 2026
Traffic management	Introduction of zoned hourly parking in three locations	Batumi	2025
Multimodality	Two new bicycle lanes	Batumi	2025
Urban planning	Develop a document for urban development according to 15-minute city principles	Rustavi	2025
Public transport	Purchase of 20 new buses; updated public transport route network operational	Rustavi	2025
Multimodality	Study on development needs for multimodal transport hubs	Rustavi	2025
Multimodality	Studies on (i) volume and frequency of Tbilisi-Rustavi public transport as well as siting for intermediate stops, and (ii) single ticket Tbilisi-Rustavi passenger transit conditions	Tbilisi - Rustavi	2025
Public transport	Purchase of 30 new buses; updated public transport route network operational	Kutaisi	2025
Multimodality	Needs study for development of electric scooter paths	Kutaisi	2025

Source: MoESD, GEF, and UNDP (2024), 2024-2025 Climate Action Plan.

Georgia's Fifth National Communication to the UNFCCC

The Fifth National Communication report to the United Nations climate convention (UNFCCC) updates Georgia's climate action, institutional frameworks and support needs. It summarises the country's social, economic, geographic and political context and provides a detailed GHG inventory through 2022, covering carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O) and other gases, forming a baseline for tracking trends and modelling future emissions.

It outlines mitigation policies across energy, transport, industry, agriculture and forestry to meet the country's 2021 Nationally Determined Contribution (NDC). Transport initiatives include expanding public transit and non-motorised mobility in Tbilisi and Batumi through sustainable urban mobility plans (SUMPs), accelerating road vehicle electrification with charging infrastructure, freight decarbonisation and promoting modal shifts. Other measures include Intelligent Transport Systems, park-and-ride, congestion charging and demand-side management.

The report also details Georgia's institutional framework, highlighting the roles of the MEPA and the Environmental Information and Education Centre, supported by the Global Environment Facility (GEF) and the United Nations Development Programme (UNDP). Adaptation strategies target climate-sensitive sectors, especially agriculture and water resources. Finally, it identifies finance, technology and capacity gaps, emphasising the need for continued international support.

2025 draft updates to the Renewable Energy Law

The 2019 Law on Promotion of Energy from Renewable Sources sets out a framework and action plan to 2030, including non-binding targets for renewable energy in transport, electricity and heating/cooling. MoESD developed a 10-year action plan, the 2021-2030 National Renewable Energy Action Plan (NREAP), to guide implementation of the 2019 Law, with support from international financial institutions.

A new draft bill is being finalised to update the 2019 Law, aligning it with the EU Clean Energy Package and Renewable Energy Directive (RED II) to meet obligations under the Association Agreement. The draft sets a 2030 renewable energy target of 27.4% of the total energy mix, including 7% for transport, with separate multipliers for advanced biofuels and renewable electricity in road and rail transport.[36]

MoESD expects to adopt the updated law by the end of 2025.

[36] Additional updates in the draft include revised technical definitions of renewables, biofuels and renewable fuels of non-biological origin (RFNBOs) to align with EU standards. They also include updated reporting for transport energy use, such as measures to support high-capacity EV charging powered by renewables.

City-level framework

Highlights

- Georgia has made progress in aligning sustainable transport planning with its climate and energy commitments. By mid-2023, 11 subnational Sustainable Energy Action Plans (SEAPs) had set 2030 transport targets, which have since been integrated into national strategies like the Climate and Sustainable Action Plan (CSAP) and the National Energy and Climate Plan (NECP).
- Reliance on private cars dominates Georgian cities, reflecting poor urban planning, inefficient public transport and limited walking and cycling infrastructure. Polls in Tbilisi show growing support for public transit, reversing earlier preferences for road expansion. Outside the capital, public transit services face challenges of ageing fleets and unregulated minibuses. Short-term budgets and political cycles, as well as long payback periods, slow investment in sustainable transport.
- Tbilisi, home to 35% to 40% of Georgia's vehicle fleet, suffers from severe air pollution, congestion and road safety issues. Since 2017, the city has rolled out major plans, often with international financial support, including bus and metro modernisation, new Bus Rapid Transit (BRT) lines, cable cars, cycling networks, parking reforms and "superblocks" that prioritise pedestrians and cyclists. Progress is visible but falls short of the ambitions set out in strategy documents.
- Public transport networks have improved, but further progress depends on bus-lane prioritisation and new fleet investment, as well as both physical and digital infrastructure. Fare integration in 2022 improved multimodality, but equity and safety gaps persist.
- Other major cities, such as Batumi and Kutaisi, have adopted sustainable urban mobility plans (SUMPs) and enhanced public transit, walking and cycling infrastructure.
- Public involvement in city transport planning has been very limited. For example, Tbilisi's 2023 Transport Plan is only available in English, not Georgian. To build support and awareness for sustainable transport, stronger public engagement is essential.
- National-level reforms that support municipal policies that emphasise multimodality and accessibility, coordinated joint tenders for clean technology, and regulatory guidance are essential to scale up sustainable mobility. Cities must enshrine their SUMP plans in law, prioritise high-impact projects and coordinate across municipalities to speed progress.

This section outlines the key actors, initiatives and progress in sustainable urban transport. It reviews projects in Tbilisi, Batumi and Kutaisi aimed at improving safety, expanding mobility options and creating healthier, more liveable cities. These plans are expected to reduce urban congestion and CO_2 emissions, while lessons learned can guide similar interventions in other Georgian cities.

Institutions and stakeholders

By December 2022, 26 subnational authorities in Georgia had joined the Covenant of Mayors, committing to Sustainable Energy Action Plans (SEAPs). By July 2023, 11 SEAPs included 2030 targets for emissions reductions and energy efficiency, prioritising transport. Many focus on "shift" and "improve" strategies, such as investing in public and non-motorised transport and optimising traffic management. Some SEAP measures have been integrated into Georgia's Climate and Sustainable Action Plan (CSAP) and National Energy and Climate Plan (NECP) following consultations with MoESD and MEPA.

Efforts are under way to promote sustainable transport in Georgia's major cities

In Georgia, as in many other countries, vehicle activity is concentrated in cities, where poor urban planning has made alternatives inaccessible, costly, inconvenient or impractical, reinforcing reliance on private cars. Yet public opinion indicates strong and growing support for public transport.

In Tbilisi, polls conducted in 2017 and 2021 show that improving public transit, including priority bus lanes, received more support than expanding roads and parking. This represents a shift from 2015 and earlier surveys, when road and parking expansion were prioritised. Starting around 2010, international project finance, policy loans and technical assistance, have helped Tbilisi modernise and integrate its public transit network.

Public transport outside Tbilisi is inefficient. City buses are hobbled by duplicated routes, congestion, safety issues and poorly designed fares, while unregulated minibuses dominate suburban routes with unreliable, peak-only service. Georgian cities face similar hurdles: tight budgets and staff shortages, limited access to multilateral development funding – which favours larger projects than most cities can offer[37] – and a lack of coherent short- and long-term strategies (except in cities with SUMPs, such as Tbilisi, Batumi and Kutaisi).

[37] In several Indian cities, for example, bulk tenders and procurement strategies have proved to be extremely successful in aggregating demand for electric buses and establishing contracts for their operations under India's 2022 Grand Challenge. In the Roadmap chapter of this report, we recommend this approach as a short-term coordinated solution across Georgian cities.

Efforts to address this have gained momentum at a national level. Georgia's 2024-2025 Climate Action Plan prioritises urban transport interventions in major cities, including urban planning, fleet renewal and expansion, network optimisation and multimodality. Other promising developments include the August 2023 establishment of the Interdepartmental Commission for the Development of the Transport and Logistics Sector of Georgia, and the National Transport and Logistics Strategy, both of which aim to improve coordination between municipal and central governments and build local technical capacity.

Georgian cities have recently started shifting some focus and investments away from car-centric planning toward public transport, but progress is slow. Investment in sustainable urban transport infrastructure and vehicle fleets has been constrained by limited political will, municipal budgets and awareness of wider benefits, such as cleaner air, greater equity and long-term economic gains. Sustainable urban transport projects can often take years to pay off. Short political cycles and tight budgets can also delay measurable improvements in mobility, congestion, air quality and emissions.

Non-motorised transport, such as walking and cycling, is often a low priority and poorly integrated into urban planning. Cycling infrastructure is fragmented, with isolated lanes or shared routes that do not form continuous networks. Batumi has the most extensive network of separated cycling lanes, while cities like Tbilisi, Kutaisi and Kobuleti have limited infrastructure that is often disrupted by delivery vehicles or motorcycles.

The Covid-19 pandemic also negatively affected public transport, reducing ridership and challenging the financial viability of some systems. Longer-term effects on urban mobility remain uncertain, and project cycles that extend beyond the mandates of elected officials pose additional planning challenges.

Promoting sustainable urban mobility advances multiple Sustainable Development Goals (SDGs). It supports greenhouse gas mitigation (SDG 13), health and well-being (SDG 3), and directly advances SDG 11 by promoting safe, affordable, and accessible transport systems for all, including vulnerable groups, by 2030.[38]

Tbilisi

The registered vehicle fleet of Georgia's capital has grown sevenfold since 2000. Home to more than 1.2 million people, Tbilisi has grown with minimal urban

[38] Sustainable Development Goal (SDG) 3.6 aims to halve the number of global deaths and injuries from road traffic accidents by 2030. SDG 11.2 reads: "By 2030, provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with particular attention to the needs of those in vulnerable situations."

regulation, resulting in sprawling development. Its vehicle fleet has surged from just over 100 000 in 2000 to 810 000 in 2025 – 35% to 40% of Georgia's total – despite the fact that the city represents less than 30% of the national population.

Road vehicles are the main source of air pollution in Tbilisi, responsible for more than 90% of emissions. $PM_{2.5}$ levels consistently exceed international standards, disproportionately affecting poorer and less-educated households. Since 2015, polls show residents view air pollution as the city's top environmental issue, followed by road infrastructure.

Civil society groups have emerged to address air quality, road safety, green spaces, public transport and urban planning. Road safety remains a major concern for drivers, passengers, cyclists and pedestrians, while inadequate parking management continues to challenge the capital.

Tbilisi is rolling out ambitious plans to improve urban mobility and air quality

A decade of financial support from the Asian Development Bank (ADB), the European Bank for Reconstruction and Development (EBRD) and the Asian Infrastructure Investment Bank (AIIB) has yielded major upgrades to Tbilisi's public transit and vehicle fleet. Yet the city's transport planning remains largely road-focused – from a EUR 900 000 overpass in 2018 to a EUR 4.5 million arterial road in 2019 linking a wealthy suburb – rather than prioritising efficient alternatives to car travel.

Recommendations to modernise and prioritise public transit, including metro and bus networks, are progressing, but at a slower pace than suggested in official reports commissioned by Tbilisi City Hall. Civil society – motivated by congestion, air pollution and unsafe or unreliable public transport – has played a key role in promoting these shifts.

Significant strategy and planning documents since 2017 include:

- The 2017 Green City Action Plan (GCAP)
- The 2017-2020 Air Quality Plan for Tbilisi
- The 2020 Tbilisi Sustainable Urban Transport Strategy (SUTS)
- The Tbilisi Land Use Masterplan
- The 2023 Tbilisi Transport Plan (TTP), formerly the Sustainable Urban Mobility Plan (SUMP)
- The 2024-2026 Air Quality Plan for the Tbilisi Agglomeration

These documents, summarised below, have helped steer investments toward a more sustainable, efficient urban transport paradigm.

Sustainable transport milestones in Tbilisi

Years	Project	Cost/loans	Description	IFI finance
2010	Minibus reform and fleet renewal		Ownership and management of all minibuses consolidated in a private company (Tbilisi Minibus); old vehicles were replaced with newer ones	
2010	Public transit fare reform		Fares for minibus trips increased by 60%; those for bus and metro increased by 250%	
2015-2017	Tbilisi Sustainable Urban Transport Strategy; Green City Action Plan		Recommends developing an intermodal public transport network, rather than road construction	ADB; EBRD
2016-2019	Expansion of public bus network; bus-only lanes	EUR 157 mil / EUR 92 mil	860 Euro VI buses (370 CNG/490 diesel); bus depot rehabilitation	EBRD
2018-2019	Regulation of taxis		Two types of taxi licences: A (left-hand side drivers, white vehicles, with full official taxi designation) and B (right-hand side; app or call-based services only)	
2017-2021	Metro extension and station reconstruction	USD 81 mil (ADB MFF*); EUR 71 mil (EBRD, GCF)	A new station; metro set procurement; upgrade to power distribution cabling, ventilation	ADB MFF, EBRD, GCF
2018-2020	Road transport network restructuring and modelling study	EUR 500 000 / 800 000	Recommendations to better prioritise, operate, and integrate metro, bus and minibus networks	EBRD / SYSTRA
2019	Tbilisi Master Plan; Tbilisi Resilience Strategy		Places pedestrians at the top of the transport policy hierarchy, and prioritises public transport over private cars, cites principles of transit-oriented development (TOD)	
2020	Chavchavadze Avenue redesign		Pedestrianisation and BRT corridor	
2020-2022	Renewal of the minibus fleet		90 Euro 5 minibuses introduced, and complete replacement targeted by end 2022	
2020-2023	Mobility4Cities	EUR 5.8 mil in Tbilisi and Batumi	Traffic planning / ITS, public transport upgrades, cycling masterplans, institutional capacity building	GIZ/BMZ
2021	Expansion of public bus network; building a new bus depot	EUR 83 million	About 200 new 18-meter CNG buses, planned for operations in 2023	

Years	Project	Cost/loans	Description	IFI finance
2022	Integrated fare collection system		Established a flat fare for 90-minute rides using any mode of mass transit (metro, bus, minibus and some cable cars); this increased ride fares around 2x	
2022-present	Sustainable urban mobility project	EUR 57 million	Expand the intelligent traffic management system and public transport, cycling and pedestrian networks, setting emissions reduction as main objective	KfW DKTI
2022-present	Public bus system restructuring, coordination, minibus operation reforms		Priority bus lines on major thoroughfares – 10 Tbilisi bus transit (TBT) lines for the highest throughput corridors; better integrated public transport, with main, city and local lines	
2024	Tbilisi Metro Modernisation Project	USD 140 million AIIB loans	97 metro cars (13 4-car units and 9 5-car units) to replace the existing metro cars in 2025-2030; Engage consultants to conduct feasibility studies and develop preliminary designs for rehabilitation of two depots and a tunnel	AIIB

Note: ADB MFF = Asian Development Bank's Multi-tranche Financing Facility, financing to exceed USD 300 million.

Tbilisi Green City Action Plan

In 2017, Tbilisi adopted a Green City Action Plan (GCAP) under the EBRD's Green Cities programme. The GCAP sets strategic priorities for environmental challenges across transport, energy, buildings, water, waste, green spaces and biodiversity. It establishes a baseline using around 114 environmental indicators, identifies urgent actions and defines institutional responsibilities and monitoring frameworks. Designed as a "living" document, it allows for annual reviews and updates.

Key transport-related measures include:

- **Fleet modernisation**: upgrading to compressed natural gas (CNG) and electric buses
- **Public transport improvements**: expanding networks, enhancing service frequency, reliability and comfort, and integrating ticketing (realised in 2022)
- **Non-motorised transport (NMT)**: developing pedestrian and cycling infrastructure, bike-share schemes, improved sidewalks, signage, lighting and traffic calming
- **Traffic and parking management**: introducing low-emissions zones, congestion charges, smart parking systems, stricter enforcement and promoting carpooling

- **Sustainable urban mobility planning**: implementing a Sustainable Urban Mobility Plan (renamed as the Tbilisi Transport Plan), integrating land use and transport, and incorporating environmental and social considerations
- **Road safety**: redesigning high-risk intersections, reducing speed limits in dense areas and launching public awareness campaigns
- **Intelligent Transport Systems (ITS)**: deploying real-time traffic monitoring, adaptive signals, transit management and data analytics to optimise flows and reduce emissions

The GCAP aims to provide a comprehensive framework to guide Tbilisi toward more sustainable, efficient and safe urban transport.

The Air Quality Plan for Tbilisi

The 2017-2020 Air Quality Plan places major focus on the transport sector, the city's main source of nitrogen dioxide (NO_2) and particulate emissions. Measures to cut pollutant emissions recommended by the plan include:

- introducing mandatory periodic technical inspections for all vehicles with stricter penalties and roadside controls
- improving fuel quality by aligning diesel and petrol standards with EU norms
- developing a concept for phasing out old, high-emission cars
- renewal of the bus fleet (including 680 buses and 300 minibuses) and creation of dedicated bus lanes
- development of cycling and pedestrian infrastructure
- traffic flow optimisation with new traffic lights and an automated control system

Future options such as congestion charging and low-emissions zones were also considered. Despite progress, the report notes that past efforts have been insufficient to cut pollution in the city, due to the continuous growth in vehicle numbers.

Tbilisi Sustainable Urban Transport Strategy (SUTS)

The Tbilisi SUTS aims to realign the city's transport system with modern needs. The strategy emphasises environmentally friendly and low-emissions solutions, aiming to reduce traffic congestion, improve air quality and enhance the overall quality of life for residents. It focuses on:

- **Infrastructure development**: by proposing the development of dedicated bus lanes, expansion of pedestrian zones and the creation of cycling paths to promote sustainable modes of transport
- **Public transport enhancement**: by upgrading the existing fleet to include low-emissions buses and implementing a modern fare collection system to improve service efficiency and accessibility

- **Traffic management**: by further enhancing the existing intelligent traffic management systems to optimise traffic flow and reduce congestion
- **Policy and institutional framework**: by strengthening capacities and establishing clear rules considered essential to support sustainable urban transport initiatives

The strategy outlines a phased implementation plan over 15 years, divided into three stages:

- **Short term (1-5 years)**: Focus on immediate improvements such as upgrading public transport services and implementing traffic management systems
- **Medium term (6-10 years)**: Development of infrastructure for non-motorised transport modes and further enhancement of public transport services
- **Long term (11-15 years)**: Consolidation of sustainable transport systems and integration with regional transport networks

The strategy highlights the need for substantial investment and institutional collaboration. It proposes a mix of funding sources, including government budgets, international loans and private sector participation. Institutional reforms are also recommended to ensure effective implementation and monitoring of the strategy.

Tbilisi Land-Use Masterplan

The Tbilisi Land-Use Masterplan aims to address the challenges the city has faced due to unregulated construction, environmental degradation and strained infrastructure by introducing a structured approach to urban development.

It proposes a vision of Tbilisi that embraces four principles: compactness, sustainability, connectivity and resilience. Urban regeneration, infrastructure development, environmental protection and social inclusion are presented as the key objectives needed to realise these goals.

Tbilisi Transport Plan

Commissioned by City Hall with support from the Asian Development Bank (ADB), the plan envisions transforming Tbilisi from a car-dependent city into one that prioritises walking, cycling and public transit. Rather than focusing on emissions reduction, the plan highlights opportunities for enhancing quality of life, revitalising public spaces, improving safety and reducing local pollution.

The plan's mission statement is "to deliver to the citizens of Tbilisi an effective, efficient, safe and sustainable urban transport system that is accessible and affordable for all and contributes to a better quality of urban life and environment." The plan is guided by three axes of potential interventions (referred to as

'scenarios' in the document) – one focusing on **public transport**, another on **walking and cycling**, and a third focusing on **travel demand management** (TDM), including parking and speed limits.

The plan's **Retained Scenario** combines the best of all three, with a strong emphasis on TDM, expanded public transit and improved pedestrian and cycling infrastructure. Staged interventions are designed to achieve specific modal share targets which significantly reduce car dependency, maintain the share of walking trips despite rising standards of living, and encourage bicycle use.

Modal split in Tbilisi in 2016, and modal split in 2043 as targeted in the Tbilisi Transport Plan

Transport mode	Modal split in 2016 (%)	Target modal split in 2043 (%)
Public transport	39.1	43
Walking	26.9	27
Car	29.7	20
Cycling	<1	8
Taxi	-	2

The plan identifies key action areas for each of the three axes, each of which was subjected to a Social and Environmental Impact Assessment (SEIA), scored based on social, environmental, economic, accessibility and gender impacts. Many actions showed medium-to-strong benefits, especially in accessibility, safety and inclusivity. Key action areas across each axis are:

Public transport

- **Metro modernisation**: new entrances, lifts, escalators and improved accessibility (initial financing through the Asian Infrastructure Investment Bank (AIIB) Tbilisi Metro Modernisation Project)
- **Tbilisi Bus Transit (TBT)**: 10 new rapid bus routes served by 18-metre articulated buses every four minutes, dedicated lanes and upgraded stations
- **Better buses and minibuses**: Enhanced contracts, enforcement, cleaner buses and improved information systems
- **Cable cars**: six new routes to connect hilltop residences with business districts
- **Commuter rail**: new services to Rustavi, Mtskheta, the Tbilisi Airport and potential future extensions to Kaspi and Gori
- **Didi-Dighomi rail link**: potential tram or tram-train connection to the city centre.

Walking and cycling

- **Bicycle network**: 325 kilometres in total, including both a "Master Network" and "Velo Ubani" (bike-friendly neighbourhoods)
- **Pedestrian streets**: expansion of car-free zones like Vashlovani and Machabeli Streets
- **River crossings**: upgrades to four bridges and a dedicated bridge for pedestrians and cyclists
- **Vision Zero**: target of zero road deaths via lower speed limits, safer crossings and stricter enforcement, in line with the global Vision Zero Network challenge targets.

Travel Demand Management (TDM)

- **On-street parking management**: redesigned layouts, stricter enforcement, partnerships with private operators and exploration of opportunities to use revenue – estimated at up to GEL 36.6 million (USD 13.4 million) – to subsidise public transit fares, enhance service quality and expand bus and metro networks
- **Parking levy**: Fees for off-street parking to reduce subsidies and fund transit
- **Behavioural change initiatives:** school outreach and public campaigns, regulations and incentives to encourage alternatives to car travel, including a dedicated campaign promoting bicycle use, safety and awareness of traffic rules.

The plan also includes a complete redesign of public infrastructure and urban spaces, and envisions investments in digital technology and operations to improve the efficiency of traffic movement and logistics.

Infrastructure and urban spaces

- **Superblocks**:[39] including pilot zones (in Sololaki, Kiacheli, London Park) prioritising pedestrian and cyclist access with restricted car entry
- **Freedom Square and Rustaveli Avenue**: conversion into people-focused boulevards with bike lanes, public spaces and safer crossings
- **Kote Afkhazi Street**: complete redesign for pedestrians and cyclists with plazas and green spaces
- **Waterfront revitalisation**: new parks, green spaces, pedestrian bridge and a skate park along the Mtkvari River.

[39] In urban planning, "superblocks" merge several traditional city blocks into a single area, usually bounded by major roads. Within a superblock, only local motorised vehicle traffic operation is permitted on internal streets, and priority is given to pedestrians, cyclists and green spaces. This idea is to cut through-traffic, noise and pollution while improving safety and liveability. In cities like Barcelona, superblocks are intended to foster sustainable, people-centred neighbourhoods that blend homes, shops and recreation within a walkable urban fabric.

Technology and operations

- **Intelligent Transport Systems (ITS)**: smart traffic controls, real-time data and integrated traffic management
- **Urban logistics**: designated loading zones, freight hubs and restricted zones for heavy vehicles.

The above interventions are staged based on level of ambition and priority level, as well as feasibility considerations. Priority projects are set out in a five-year (2023-2028) action plan, with estimated investment of roughly USD 500 million. Each intervention is detailed with assigned responsibilities, environmental and social impact scores, costs and timelines. Priority projects for 2028 include:

- **Pilot superblocks:** Three pilots in Sololaki, Kiacheli and London Park will transform blocks into pedestrian-priority zones with limited car access, lower speed limits and improved public spaces. Tactical urbanism will precede permanent works, allowing community feedback. Ultimately, 45 superblocks are planned to reshape Tbilisi's mobility and create safer, more vibrant neighbourhoods.
- **Waterfront revitalisation:** Along the Mtkvari River near the Public Service Hall, new parks, continuous green space, a pedestrian bridge and a skate park will reclaim the riverbanks for recreation, walking and cycling.
- **Freedom Square and Rustaveli redesign:** Freedom Square's roundabout will be removed to create a public plaza, while Rustaveli Avenue will become a multimodal boulevard with cycle lanes, safer crossings and traffic calming.
- **Kote Afkhazi Street:** This Old Town corridor will be redesigned to prioritise walking and cycling, reorganise parking, add plazas and enhance accessibility.
- **Metro upgrades:** New entrances, lifts, escalators, improved platforms and fleet renewal will modernise key stations.
- **Tbilisi Bus Transit:** Ten Bus Rapid Transit (BRT) routes with articulated buses operating every four minutes will operate in dedicated lanes, with upgraded stops and terminals.
- **Cable cars:** Six new lines will connect hillside neighbourhoods with business districts, including Isani-Vazisubani and Station Square-Varketili.
- **Cycling pilots:** 30 kilometres of new routes will extend cycling infrastructure, with pilot "Velo Ubani" neighbourhoods in Marjanishvili and Saburtalo.
- **River crossings:** Four bridges – Metekhi, Saarbrucken/Dry, Galaktioni, and Baratashvili – will be upgraded for pedestrians and cyclists, plus a new bridge will be built near the Public Service Hall.

The Tbilisi Transport Plan stresses that success requires legal and political support, stronger capacity (including a dedicated Plan Officer) at both City Hall and the Transport and Urban Development Agency (TUDA), better data on mobility, emissions and safety, and ongoing public engagement and monitoring.

For all its strengths, the Tbilisi Transport Plan provides scant details on the expected impacts of its proposed measures on air quality or reductions in greenhouse gas emissions. It also omits the need to reduce Tbilisi's dependence on fossil fuels. Although it aims to cut personal car use to 20% by 2043, it provides no recommendation on measures to ensure a transition to electric vehicles. It also lacks details on regulations or fiscal policies needed to reduce fossil fuel use and transition to electric mobility in both private and public transport fleets, including cars and buses.

The Air Quality Plan for the Tbilisi Agglomeration

In addition to investments in air quality monitoring and local pollutant mitigation measures targeting industrial emissions, the Tbilisi Agglomeration's 2024-2026 Air Quality Plan allocates funding to many measures designed to cut transport emissions:

- Street cleaning to reduce road dust
- Strict on-road enforcement and increased deployment of monitoring devices (including remote monitoring) to detect vehicle emissions
- Expanding intelligent traffic controls
- Discouraging removal of catalytic converters
- Impact assessment of the 2017 tax reform promoting imports of newer and cleaner vehicles
- Modernisation of street and road design
- Expanding and improving public transport links, including between suburbs, surrounding towns and Tbilisi
- Expanding zonal parking
- VAT exemptions for imported bicycles, including electric bicycles
- A feasibility study of light rail
- Streamlining land acquisition and offering preferential tariffs for public charging sites
- Introducing Euro 6 standards for new vehicles registered within the Tbilisi Agglomeration
- Expanding bus routes and integrating fare payment systems between Rustavi and Tbilisi.

The Air Quality plan also funds informational and awareness raising efforts, including the following transport-related programs:

- Participation in the annual European Mobility Week
- Carrying out a public awareness campaign for sustainable mobility
- An "eco-driving"[40] awareness campaign for regional bus (coach) drivers

Tbilisi's progress sets the stage for further action and offers a blueprint for other cities

Tbilisi has led in public transit and minibus reforms. Tbilisi has renewed more than 700 buses – powered mostly by compressed natural gas (CNG) and Euro 6 diesel, although electrification remains a priority. The city leads efforts to formalise and integrate minibus (marshrutka) and bus operations as well as improve reliability, consistency and ticketing. A 2020 plan, based on an EBRD/SYSTRA study, proposed a three-tiered hierarchy of bus lines and emissions-reducing measures. Integration of Tbilisi's 10 planned bus transit lines remains partial, with only a third of lanes completed as of mid-2022, limiting service. An app launched in 2022 now offers real-time tracking of buses and minibuses, but a planned procurement of 100 electric buses has yet to materialise.

In 2021, reforms shifted minibus drivers from fee-based to salaried employment, with the city managing revenues. Fleet size was reduced from 1 500 to 1 700 vehicles to about 1 000, routes were reorganised to better reflect travel demand, cutting their number to 110 from 155.

Tbilisi continues to expand and modernise its metro service. The European Bank for Reconstruction and Development (EBRD) and the Green Climate Fund (GCF) allocated EUR 75 million for 44 new carriages and infrastructure upgrades, and in 2021, 106 existing metro cars were restored. However, deliveries from the Russian supplier were halted in 2022 due to sanctions. A planned ground-based metro line to the airport was also not realised.

Integrating fares is a first step toward providing seamless multimodal transport. In 2022, Tbilisi introduced integrated fares across buses, minibuses, metro and some cable cars, with flexible passes and contactless payment. Fares rose to GEL 1.0 per 90 minutes (up from GEL 0.5-0.8), although discounts were maintained for vulnerable groups, students, pensioners and some municipal workers.

[40] Eco-driving means driving in ways that minimise fuel use, emissions and wear on vehicles. It entails smooth acceleration and braking, steady speeds, anticipating traffic flow and avoiding needless idling. Good habits also include efficient use of higher gears, keeping tyres properly inflated and cutting excess weight or drag. It also extends to trip planning – choosing routes and times that avoid congestion.

Further improvements are needed to make the most of Tbilisi's urban form, density and central location. Public bus services still face fundamental challenges, including long waits (the average bus headway is 18 minutes, compared with four to eight minutes in Paris, Berlin or Barcelona), overcrowding, congestion and reliability issues. To reach modal shares targeted by city planners, trips on public transport must take less than two-thirds as long (door-to-door) as private car or taxi trips.

Women, low-income groups and students rely most on public transit, but barriers persist. Poor access to reliable, safe and affordable transport can perpetuate and exacerbate economic and social inequality, making it more difficult to access jobs, healthcare, education and other important services and opportunities. With EBRD support, Tbilisi Transport Company (TTC) has recently introduced gender equity and anti-harassment policies and hired female drivers, yet harassment remains common. Accessibility has improved with ramps and information screens on some buses, but the metro and most minibuses remain inaccessible to people with disabilities. The ADB's Cities Development Initiative for Asia (CDIA) is helping address these accessibility gaps.

Tbilisi has adopted limited policies to promote electric cars. An electric car-sharing scheme launched in April 2022 struggled to attract users beyond tourists and was discontinued in 2023, though a relaunch is planned.

Tbilisi has introduced several incentives to promote EV adoption:

- **Free taxi licenses**: Resolution No. 24-80 (2018) grants free taxi licenses (M1 category) for EVs over 4 kW until 2029.
- **Free parking**: Since 2018, EVs park for free citywide.
- **Free charging and infrastructure expansion**: Public EV charging is free. About 70 publicly accessible charge points were installed as of mid-2023, 30 more had been approved, and 200 are planned for February 2025, partly through partnerships with the Municipal Service Provider MartEV.

Batumi

Sustainable Urban Mobility Plan

The Global Environment Facility (GEF), United Nations Development Programme (UNDP), Batumi City Hall, and Georgia's Ministry of Environmental Protection developed Batumi's first Sustainable Urban Mobility Plan (SUMP) in 2017. It set out a vision for integrated mobility – improving public transport, cycling, parking and road safety. The estimated climate mitigation impact, as compared with a reference scenario, is 7 kt CO_2-eq.

The SUMP includes several key milestones:

- Zoned on-street parking with differentiated tariffs (2019)
- An awareness campaign promoting public transport (EUR 50 000 to EUR 75 000)
- A dedicated bus-lane corridor and two bus-minibus (marshrutka) transfer centres (EUR 1.4 million)
- A 4.8-kilometre Bus Rapid Transit-style[41] corridor with 24 stops (EUR 400 000 to EUR 1 million)
- Renewal of more than 100 diesel buses (EUR 19 to 26 million)
- Acquisition of 8 electric buses (EUR 4 million, partially funded by an EBRD grant; these were the first e-buses to operate in Georgia, beginning in 2017)
- An off-board fare payment system for bus and minibus operations

Ongoing or future projects outlined in the SUMP include:

- taxi regulation
- halving the minibus fleet from 478 by 2022
- Acquisition of 50 new buses (with funding from the European Union/EBRD); half of which had been purchased by 2021
- Acquisition of 100 new minibuses

Green Cities: Integrated Sustainable Transport

Launched in July 2015 and completed in December 2020, this USD 1.35 million initiative piloted sustainable urban transport in Batumi and across Ajara. Led by the UNDP, Georgia's Ministry of Environment, Batumi City Hall and the GEF, it aimed to modernise transport planning, invest in sustainable infrastructure and promote Batumi as a green city. Combining analytical groundwork, modelling, pilots and capacity building, it laid the foundation for greener urban mobility.

The project delivered:

- Integrated Sustainable Urban Transport Plans (ISUMPs) for Batumi and Ajara
- Batumi's first comprehensive mobility survey (1 550 households), plus passenger counts on 45 routes and traffic assessments at 12 locations
- Development of Batumi's first four-step transport model with staff training

[41] Bus Rapid Transit (BRT) is a high-quality bus-based public transport system designed to deliver fast, reliable and efficient service that rivals metro or light rail, but at lower cost. It combines dedicated lanes, priority at intersections, and modern at-grade stations for quick boarding. BRT systems typically use large, high-capacity buses with off-board fare collection, real-time information and frequent service. By separating buses from mixed traffic and streamlining operations, BRT reduces congestion, travel times and emissions. It is widely adopted in cities worldwide as a flexible, scalable solution to improve urban mobility and support sustainable transport goals.

- Pilots of 3.8 kilometres of bus/bike lanes, 30 information boards and seven digital parking zones covering 230 parking spaces
- Feasibility studies and planning documents to cut transport-related emissions

Green City Action Plan

In July 2018, Batumi joined the EBRD's Green Cities initiative to address urban environmental challenges. Supported by EBRD's Stakeholder Special Fund, the Swedish International Development Cooperation Agency (SIDA) and consultants from AECOM and WEG, the city conducted a baseline assessment and developed policy and investment frameworks across transport, waste, energy, water, land use and industry. The Green City Action Plan (GCAP) was officially approved in October 2020 after a public launch with the mayor and EBRD delegates.

Transport was the priority: A EUR 5.5 million sovereign loan and EUR 1.5 million grant from the Eastern Europe Energy Efficiency and Environment Partnership (E5P) financed upgrades to the municipal fleet with 40 new Euro V diesel and 8 electric buses added by end-2020. The plan also called for expanded bus and bike lanes, a smart parking scheme, and future green investments. An EUR 800 000 technical cooperation package supported capacity building, stakeholder engagement and institutional reforms to secure implementation.

Other projects

Other sustainable transport policies and projects in Batumi include:

- A "walking school bus" for children and separated lanes following the Dutch model[42]
- The Batumi fuel-cell electric vehicle (FCEV) pilot project: a feasibility study is underway for 6 MW of grid-connected solar PV (in Sartichala), to be used to run an electrolyser to produce hydrogen, which will eventually be used to fuel a small trial fleet of FCEV buses. A grant of EUR 23 million has been provided for the project by the Kreditanstalt für Wiederaufbau (KfW) Power-to-X fund.
- Trial of two low-carbon demonstration corridors, along Chavchavadze and Abuseridze streets, and Chavchavadze-Baratashvili-Gorgiladze streets.

The 2025-2027 Air Quality Plan for the Black Sea Zone proposes measures to address pollutant emissions from transport in Batumi. In addition to investments in air quality monitoring, public awareness and education, and mitigation measures targeting industrial and agricultural emissions, the plan allocates funding to measures aimed at reducing road vehicle emissions, including:

[42] Cycling infrastructure in the Netherlands is paved but separated from motorised roads for cars and other light- and heavy-duty vehicles.

- wet street cleaning
- an assessment of the costs and benefits of adopting Euro 6/VI emissions standards
- increased on-road enforcement of vehicular emissions
- testing of road fuel sulphur content for compliance with fuel quality standards
- expansion of smart traffic lights, with siting based on considerations of where air quality conformity issues can be most effectively addressed
- expansion of the bus network and upgrading stops
- expansion of walking and cycling infrastructure, including lanes and parking, and of municipal bicycle rental facilities
- installation of 50 EV charging points
- emissions control for international truck operations

The plan also targets maritime emissions with measures including:

- commissioning a study into port cargo handling to reduce dust emissions
- annual ongoing testing of maritime fuel (heavy fuel oil and gas oil), for compliance with fuel quality standards.

Kutaisi

Kutaisi, Georgia's third-largest city, is advancing sustainable urban mobility with support from the Global Environment Facility (GEF). In 2022, GEF launched a three-part initiative focused on low-emissions transport:

- **Integrated land-use and urban development:** creating an Integrated Smart Urban Mobility Plan (ISUMP) linking land use with sustainable transport
- **Technical assistance and investment**: promoting electric public transport deployment
- **Capacity development**: strengthening institutional and technical expertise for electric mobility and sustainable land management

By 2026, the program aims to implement two demonstration projects and prepare a concept for scaling low-carbon transport citywide. A flagship project, the Low-Carbon Nature-Based Urban Development Project (2022-2026) led by the United Nations Environmental Programme (UNEP) and the Regional Environmental Centre for the Caucasus (REC Caucasus), integrates electric mobility into spatial planning. A pilot introduced two electric buses connecting Kutaisi with Sataplia Nature Reserve. Early activities include reducing EV tolls, waiving charging fees, upgrading the grid and planning charging infrastructure.

Through collaboration with Mayors for Economic Growth (M4EG), Kutaisi is also pursuing “eco-smart” strategies to strengthen economic and climate resilience, spurred by the 2023 earthquake and floods.

In February 2025, Kutaisi finalised its ISUMP, developed by Smart Plan with REC Caucasus and local authorities, following EU SUMP guidelines. The plan is based on eight principles: integrated urban planning, modal integration (walking, cycling, public transport, shared mobility), cross-sectoral coordination, stakeholder engagement and evidence-based monitoring. The ISUMP positions Kutaisi as a leader in smart, resilient, low-carbon urban development in the South Caucasus.

Other cities

European Bank for Reconstruction and Development (EBRD) loans have supported fleet renewals in other major Georgian cities. In 2020-2021, the government purchased 175 new Euro 5 diesel buses for Zugdidi, Rustavi, Kutaisi, Gori, Telavi and Poti.

Various multilateral development banks and international financial institutions are now exploring technical assistance, policy support and project finance for urban transport. The Agence Française de Développement (AFD) is assessing projects in central Georgia; Germany’s Gesellschaft für Internationale Zusammenarbeit (GIZ) has held meetings on sustainable urban mobility and intercity passenger reforms, including bus station standards and operator permitting on the Batumi-Tbilisi corridor; and the Swedish International Development Cooperation Agency (SIDA) is supporting sustainable mobility under the European Union’s Green New Deal roadmap.

National regulatory reforms, policies and strategic guidance are essential to give cities clear direction. Without supportive national frameworks, municipalities struggle to implement projects or attract international finance. Coordinated national tenders for technologies like electric buses and public chargers can reduce costs and administrative burdens.

For their part, municipal policy makers should focus on embedding planning documents into municipal law, prioritising high-impact projects, allocating budget and staff, coordinating with other cities and building capacity to implement sustainable urban transport effectively.

Sustainable transport roadmap

Highlights

- Georgia's reliance on imported fossil fuels creates energy insecurity, price volatility and geopolitical risks. More efficient, electrified road transport can cut emissions, improve health, mobility, and create jobs – all of which aligns with Paris Agreement and EU accession goals.
- Georgia's renewable energy base, location and skilled workforce also create opportunities for clean technologies like EVs, batteries and green hydrogen derivatives, though global partnerships remain underdeveloped.
- The transition requires coordination across ministries and municipalities. The new Interdepartmental Commission offers a platform for integrated planning, but civil society and municipal governments need greater representation to ensure decisions reflect social priorities as well as local context and budgetary constraints.
- Current fiscal and legal frameworks favour fossil fuels. Reforms should phase out subsidies, align fuel and road taxes with real costs (pollution, congestion, energy security) and support clean technologies.
- Tools include EV incentives, "feebates," dynamic parking pricing, and revenue-neutral fiscal measures to expand public transport. Electricity market reforms – like time-of-use tariffs and smart charging – can further accelerate electrification.
- Rapid EV deployment requires close coordination between energy and transport sectors. A dedicated EV Task Force should be established to guide charging infrastructure rollout and regulatory design.
- Skills, research and development, and education are underfunded, despite recognition in climate and energy plans. Georgia needs to invest in programs that prepare its workforce for opportunities in engineering, logistics, EV maintenance, urban planning and clean tech. Public awareness campaigns and reforms in education should sensitise citizens to health and mobility impacts.
- Georgia can leverage its low-emissions electricity and hydropower and renewable potential to attract strategic investments in low-emissions companies and industries. Pilot projects could build domestic capacity in clean technologies.
- A roadmap of regulations, fiscal policies, enforcement and data-driven strategies in the near term (to 2030), medium term (to 2035), and long term (in the 2040s), lays out a policy pathway toward a more competitive, efficient and sustainable transport sector at both national and city levels.

Georgia faces major challenges in reducing transport emissions, but the transition to low-emissions, efficient systems offers significant environmental, social and industrial benefits. Heavy reliance on imported fossil fuels creates fuel price volatility, slows growth and raises geopolitical risks. Transport electrification and efficiency can substantially enhance energy security and resilience.

This roadmap describes how Georgia can seize strategic opportunities from transport sector transformation. Doing so can bring health, mobility and job benefits while aligning Georgia with Paris Agreement commitments. Policy makers are working with corporate partners and supporting priorities set out in earlier plans, as shown by already completed or underway in the National Energy and Climate Plan (NECP) and the 2024-2025 Climate Action Plan. Some prospects, such as partnering with global firms to build domestic low-emissions technology capacity, have not yet been realised, but should be considered.

Georgia's strong renewable electricity base, strategic location as a link between Asia and Europe, and skilled workforce create advantages for developing electric battery and vehicle value chains, expanding freight hubs and deep-sea ports, and even potentially producing electrolytic hydrogen and low-emissions hydrogen derivatives for export to the European Union. Partnerships with leaders in EV assembly, mobility and energy storage battery production, as well as recycling, could position Georgia as a regional exporter. In addition, responsibly managed biomass resources may offer limited but meaningful opportunities for industrial development and jobs.

To reach its goals, Georgia must tackle governance, regulation and investment challenges and seize industrial opportunities

Georgia faces three key challenges:

- **Governance**: Steering Georgia's transport transition requires unprecedented coordination among ministries and agencies, with institutions empowered to drive legal and administrative reforms. This would send clear signals to businesses, research institutions and civil society – signals that will be needed to invest in and adopt clean technologies and meet EU accession requirements. But progress is hampered by limited capacity within authorities and insufficient technical expertise.
- **Regulatory reform**: Accelerating the shift to cleaner, more efficient systems requires reforming laws, regulations and fiscal policies that currently favour incumbents, despite the clear benefits of emerging energy technologies and transport systems – including high-quality public transport.
- **Mobilising investments**: Georgia faces limited access to public and private finance. Meeting investment needs requires attracting multilateral

development funds and foreign direct investment in the short term, while gradually reforming fiscal policies to secure reliable and sustainable sources of funding for public projects over the long term.

If Georgia is able to build on its strengths, it can seize several important opportunities:

- **Investing in skills and education**: Georgia's climate and energy plans highlight skills and education, but proposed funding levels and focus areas do not yet match strategic opportunities in emerging industries, including clean and digital technologies.
- **Establishing a cross-sector EV Task Force**: A joint advisory body of government and private stakeholders from power and transport should coordinate sectoral efforts and report regularly to the Interdepartmental Commission for the Development of the Transport and Logistics Sector.
- **Pursuing advanced clean technology opportunities**: Georgia should craft an industrial strategy leveraging renewable energy – especially hydropower – to attract EV and green hydrogen industries. Priorities include EU partnerships and exports, Chinese investment, expertise and technology transfer, and workforce development. Initial steps should include identifying opportunities and launching pilot projects, with success hinging on coordination across ministries.
- **Leveraging digital technologies**: Digitalisation can improve efficiency, cut emissions, and enhance safety and access. Solutions like Mobility-as-a-Service integrate shared transport, while freight digitalisation optimises cargo and traffic flows. Delays risk undermining Georgia's long-term economic competitiveness.

Setting bold but achievable targets in each update to the National Energy and Climate Plan (NECP) and Nationally Determined Contributions (NDCs) allows Georgia to test CO_2 abatement strategies incrementally. Careful evaluation – using metrics such as implementation speed, emissions reduction, impacts on jobs, transport, equity, air quality and public acceptance – is essential. This approach makes it possible to accelerate effective policies, adjust those facing resistance and discontinue those that are ineffective. It also helps balance strategies: discretionary trips with high-emitting modes like internal combustion engine (ICE) cars; modal shifts within cities and for intercity and freight transport; improving the efficiency of conventional ICE vehicles; and electrification. Incremental revisions can draw on domestic and international experience to refine policy portfolios.

This roadmap proposes policy packages with timelines and milestones: short-term (to 2035), medium-term (to 2045), and long-term (2050 and beyond) to stage and prioritise the transition.

Policy themes

Governing the transition

Georgia has set ambitious greenhouse gas reduction targets in transport, driven by long-term Paris Agreement commitments and near-term alignment with European Union regulations ahead of accession. Achieving these goals requires unprecedented coordination among ministries and agencies, stronger administrative and technical capacity and focused efforts to make sustainable transport viable – by removing barriers, phasing out fossil fuel subsidies, strengthening business cases and incentivising consumers.

The creation of the Interdepartmental Commission for the Development of the Transport and Logistics Sector in August 2023 provides a foundation for a formalised, permanent, whole-of-government planning process.[43] The commission should align targets, policy and planning across national and municipal authorities, while working groups should include representatives from municipal government, civil society, academia and research institutions.

The commission should play a leading role in drafting clear legislation, supported by financial mechanisms, standards and guidelines, that empower both the national government and municipalities to act on well-defined, consistent principles.

For city-level projects and plans, representation and decision-making should be delegated to municipal authorities and civil society members of the relevant working groups. A more balanced relationship between central and local government would encourage the exchange of expertise channel resources to cities, enabling independent, context-specific decisions.

Near-term capacity building, supported by international partners such as the United Nations, international financial institutions, and the European Union, as well as long-term investments in technical and policy education, will be critical. An EV taskforce, as recommended below, should operate under this commission.

Building on its leadership in transparent data collection, Georgia should continue investing in better data validation, integration, transparency and accessibility, as elaborated in the four key opportunities presented in this roadmap.

Transport transformation must also be justified by broader benefits beyond climate goals – boosting competitiveness, developing industries and jobs, improving health and leveraging natural resources. These priorities align with European

[43] In the United States, the Joint Office of Energy and Transportation, established in 2021, is an example of international best practice in this regard. The Joint Office was dissolved in 2025 by the Department of Government Efficiency.

Union policies[44] and its taxonomy for sustainable activities, as well as the European Investment Bank's financing criteria.

Reducing transport fuel imports remains essential. Georgia's deeper integration with the European Union and the European Energy Community, which has driven reforms in the transport sector, can serve as a springboard for further progress, while opening access to EU funding and markets.

Reforming regulations and fiscal policies

Regulatory reforms are essential to accelerate the shift from fossil fuels to electricity and low-emissions transport. Eliminating fossil fuel subsidies[45] – including in the form of public funding or tax exemptions – is a politically difficult but necessary first step to internalise environmental and economic costs. Fuel taxes or road taxation should also reflect externalities such as congestion, road wear, pollution and energy security risks.

Fiscal policies can promote clean energy technology adoption via taxes and/or subsidies on vehicle purchases and operation, and on energy and other costs (e.g. fares) of alternative modes. While short-term fuel tax hikes have modest effects, long-term impacts are larger as consumers shift to efficient vehicles or alternative modes.[46] Aligning fuel taxes with externalities would lead to multiple benefits, including promoting efficiency, cutting public expenditures, and improving health and environmental outcomes.

Higher vehicle and/or fuel taxes can also be used to fund public transportation in a revenue-neutral manner. "Feebates" – taxing ICE vehicles with high fuel consumption and subsidising EVs – would further speed the transition. Gradual, demand-responsive parking fees (ensuring around 15% of parking spaces on any given block are free at all times) can reduce cruising, lower fuel use and provide municipalities with revenue for public transport.

Outside cities, road pricing based on externalities – using tolls for cars and weigh stations for trucks – should focus initially on road wear and maintenance, with early exemptions for buses and low-emissions vehicles.

Electricity market reforms can complement transport decarbonisation. Real-time price signals encourage EVs to charge when renewable supply is high, providing

[44] Examples include the Green Deal Industrial Plan, the Renewable Energy Directive, and the Fit for 55 policy package.
[45] Explicit fossil-fuel subsidies in Georgia include: (i) tax exemptions to oil and gas producing companies (Georgia Oil and Gas Limited, Norioshkhevi Georgia, and GNV Georgia) for certain operations, and (ii) full cost compensation for free gas supplied to households in the Kazbegi and Dusheti municipalities. In addition, Georgia's taxation of road fuels falls well below the rates that would incorporate the full price of externalities.
[46] For road vehicles, the short-term price elasticity of demand with respect to fuel prices (i.e. the percentage change in aggregate demand given a percentage change in price) generally ranges from around -0.05 to -0.25. However, given more time to adapt to higher fuel prices by switching to efficient or electric vehicles, or through modal shifts, longer term impacts are greater, with elasticities of -0.2 to as high as -0.8.

services similar to energy storage. Variable electricity tariffs, including two-tiered tariffs (e.g. day and night rates) and more finely differentiated time-of-use (TOU) tariffs can spur proactive consumer behaviour and incentivises aggregators to capture the economic value of arbitraging across mismatches between electricity supply and demand, thereby enabling peak shaving/shaping, initially by using smart charging.

Although electricity market reforms are not a focus of this roadmap, innovative electricity market design can accelerate the electrification of transport by exploiting the opportunities for demand-side management, including smart charging and, in the longer term, vehicle-to-grid. The NECP target of 60% smart meter penetration by 2030 is an important milestone in this respect. Further recommendations on electricity markets are provided in the section on fiscal policies and regulations for end-use electrification.

Mobilising investments

Many recommended regulatory and fiscal reforms will generate revenue, though some will not. Revenue-generating measures may face opposition, so it is vital to use funds transparently for programs with clear social benefits – especially improved transport infrastructure and options for lower-income groups.

It will take time for fuel, road and vehicle taxes to reach levels that provide a stable budget that is large enough to finance transport and energy projects. Alongside city-level investment in transit fleets, physical and digital infrastructure, and targeted farebox subsidies, public revenue will be needed to fund road upgrades and, in some cases, to complement the deployment of private charging infrastructure (e.g. to ensure rural coverage and support for electric freight).

Georgia should tap climate finance now, but wean its dependence over time

Georgia currently relies heavily on international development and climate finance for major transport and energy projects. While it should continue pursuing these sources, in the medium-to-long term it must build a more fiscally sustainable public budget. At the same time, it must ensure that public funds are coherently and transparently allocated, and that the benefits of public spending are clear to their beneficiaries.

In the short term, attracting financing from international financial institutions and climate-related funds will necessarily be an integral part of strategies to redesign cities and streets, upgrade public and non-motorised transport infrastructure and acquire electric vehicle fleets. However, in the longer term, financing of sustainable transport will require use of public revenues coming from appropriate

sources (such as fuel taxes and road use taxes, and vehicle import duties), and transparent allocation of these funds to programmes that advance the goals of transitioning to clean and more efficient technologies and processes.

Georgia's 2023 long-term low-emissions development strategy outlines the barriers to mobilising climate-related financing. Implementing the recommendations provided in this roadmap can directly address some of these barriers (including lack of transparent data, policy uncertainty, perceptions of high risks). Addressing others – such as limited resources, short-term investments, deal size preferences (the preference to finance projects of a certain minimum size), and timing of climate risk impacts – will require improving both Georgia's appeal to investors and reforming the global green finance system.

For their part, international finance institutions, bilateral agencies and funds should improve coordination with donors, review existing projects for consistency with Georgia's latest climate commitments under its NDC, and explore options for electric fleets. They should further ensure that projects funded are regularly monitored and are in line with international best practices for climate compatible lending, as well as for gender and social accessibility.

Eligibility criteria for climate finance are becoming more stringent. International climate finance streams are increasingly prioritising transport electrification and sustainable urban mobility, as well as projects at their intersection (such as urban public transit fleets, or sharing schemes for electric bicycles, motorcycles and cars). More financing streams are being made conditional on stringent and clear rules regarding technology applicability and/or CO_2 abatement potential.

One prominent example is the European Union's rules on transport finance (as established under its sustainable finance taxonomy) which permit funding based on the following criteria:

- Passenger and freight rail: Projects must be electric unless there is no electrified alternative, and then diesel rail must meet strict emissions limits.
- Public transport: Buses and other public transport vehicles must be zero- or low-emissions (i.e. electric, hydrogen, or biofuel under strict conditions).
- Road transport: Motorbikes, passenger cars and light commercial vehicles must be zero-emission vehicles (i.e. battery electric or fuel-cell electric vehicles, powered by hydrogen).
- Infrastructure: Rail, EV charging stations, green logistics centres and intermodal hubs can qualify for loans.
- Maritime: Vessels must emit substantially less than sector averages. Ships using fossil fuels must use "transitional" fuels and have credible decarbonisation plans.

- Aviation: Commercial aircraft can qualify only if zero-emission, and infrastructure must support decarbonisation.

Project financing for sustainable transport is increasingly paired with renewable energy deployment. Examples include the Asian Development Bank's 2020 loan for a solar, wind, and EV charging project in Thailand; the World Bank's funding for Dhaka and Dakar electric Bus Rapid Transit (BRT) with renewables, and its USD 750 million loan in 2024 for solar, offshore wind, hydrogen, and electric and multimodal transport infrastructure.

Opportunities

Policy uncertainty can be addressed by setting short- to medium-term policies and long-term aspirational goals. For the near term, ambitious, but achievable binding regulations are advisable. Recent experience in the European Union – such as the dilution of its 2025 car and van emissions standards through three-year averaging (European Council, 2025) – shows the value of ratcheting up rules annually rather than tightening them only every five years. In addition to ensuring that regulated companies are able to adapt their investments and strategies in a gradual and incremental manner (thereby reducing the potential for lobbying and backlash), regulations that require annual improvements provide greater clarity to consumers and to other actors, including investors, grid planners (e.g. transmission and distribution system operators), as well as mobility service providers and charging point operators, among others.

The development of clearly defined sustainable finance frameworks – including both clean vehicles and clean energy – complements these measures, helping to increase the scale of investments that need to flow towards technologies that are aligned with decarbonisation and energy diversification objectives.

Invest in skills, education and awareness

Georgia's science, technology, and innovation policies recognise the importance of research and development, but there is currently no dedicated funding or program for energy- and climate-related research, development and demonstration (RD&D). Recent climate plans include public funding proposals, but higher allocations – especially for skills and education aligned with clean technology priorities – should be considered.

The 2024 NECP outlines 14 relevant measures, including prioritising energy and climate research through improved education, international collaboration and public funding. A draft version initially targeted 1% of GDP for research and 0.1% for sustainable energy and climate by 2030, but these targets were omitted from the final version. Regarding skills development needs for the EV transition, it

specifically cites the need for "training and development of EV aftermarket and maintenance services (battery, software and power electronics)," and for developing proper facilities for EV battery replacement.

Georgia's Fifth National Communication to the United Nations climate conference (UNFCCC) also highlights the need for institutional and technical capacity building, educational reform, public awareness campaigns, stakeholder training and international cooperation. On the latter, it calls for sustained support from partners like the Global Environment Facility (GEF) and United Nations Development Programme (UNDP) to underpin long-term capacity development, knowledge-sharing and effective climate action. The government should prioritise and increase funding at national and local levels for education and awareness campaigns that make Georgians aware of how mobility and energy policies affect their health and well-being (including the transport challenges outlined in the report's first chapter).

Sustainable transport requires developing skills in electrical, civil and automotive engineering, as well as logistics and urban planning. Prioritising these and other programmes based on existing expertise, research gaps and expected societal, economic, and environmental benefits can strengthen Georgia's ability to address pressing energy and climate challenges.

Governments should prioritise building local capacity and expertise in active transport, (walking and cycling) including advocacy, policy and infrastructure. National authorities should support this with matching funds, requiring municipalities to allocate part of their budgets to skills development and walking and cycling programmes. Active mobility should be integrated into local development, transport and spatial planning, as well as urban design.

Establish an expert task force on electric vehicles

Rapid EV deployment is the most viable way to reduce road transport emissions and meet Paris Agreement targets.[47] Realising these benefits requires close coordination between the electricity and transport sectors, including upgrading transmission and distribution infrastructure (e.g. transformers, sensors, power lines) to support EVs, smart charging and vehicle-to-grid, as well as ensuring rapid, strategic rollout of EV charging stations, with careful planning of sites, capacity and phasing.

Given the coordination challenges across regulatory authorities, permitting, and grid transmission and distribution system infrastructure deployment, a task force

[47] The fact that electrification is the most promising technology pathway for achieving cost-effective and substantial reductions in greenhouse gas emissions is supported by key authoritative analyses, including the International Council on Clean Transportation, the International Energy Agency and the Intergovernmental Panel on Climate Change, among others.

of public, private and civil society representatives should be established. Representation should include: (i) the power sector – including the regulatory authority (GNERC), power transmission (GSE) and distribution system operators, charging point operators, mobility service providers, and relevant experts; (ii) the transport sector – including the Roads Department of the Ministry of Regional Development and Infrastructure and the Transport and Logistics Development Policy Department of the MoESD, vehicle importers, taxi and transport network companies, shippers, carriers and logistics service providers, as well as other relevant companies; and (iii) civil society, academia and non-governmental organisations with expertise in power sector and EV integration.

In addition to technical issues and coordination between the energy and transport sector, the task force should advise on the design and rigour of regulations and fiscal policies as these are developed and evolve.

Forge advanced clean technology partnerships with industry leaders

As part of this roadmap, Georgia is advised to develop an industrial strategy that leverages opportunities from the shift to efficient, low-emissions energy production and end-use devices (e.g. EVs). With abundant renewable energy, especially hydropower, Georgia can attract energy-intensive industries seeking sustainable, low-emissions and cost-effective power. This also supports expansion of biofuels production and entry into clean technology manufacturing (e.g. green hydrogen or its derivatives,[48] batteries or EV assembly).

The strategy should also consider the many benefits of deeper cooperation with the European Union, such as producing alternative transport fuels (e-fuels, biofuels and hydrogen-enriched biofuels) for export at premium prices under the Renewable Energy Directive, ReFuelEU Aviation and FuelEU Maritime, the EU Emissions Trading System framework (EU ETS/ETS2) and the Carbon Border Adjustment Mechanism. At the same time, Georgia could explore Chinese investment and technology transfer in EV batteries production and their supply chains, assembly, recycling, and in EV assembly.[49] Building the necessary skills and workforce will be essential.

[48] While developing green hydrogen to make low-emissions derivatives such as steel, cement or maritime or aviation fuels could be a lucrative industry, in contexts of limited renewable capacity, competition between hydrogen production and electricity for the grid must be considered.

[49] Georgia has some precedent in courting Chinese partners: In 2019, the industrial holding Aigroup worked with ChangAn on plans for an EV assembly plant in Kutaisi meant to supply ChangAn electric car rentals in Batumi and Tbilisi. The project appears to have been abandoned, however, perhaps owing to Covid-19 complications.

Multiple projects and pathways with different trade-offs exist, so coordination across ministries and agencies will be key for effective implementation and faster climate transition. In the near term, a clean technology strategy should:

- Identify and prioritise options, considering financing, opportunities and barriers (1-2 years)
- Select projects for pilot and demonstration
- Monitor and evaluate these projects while pursuing other industrial priorities

Accelerate the deployment of digital technology in transport services

Digitalisation can boost transport efficiency, cut emissions and improve access, service and safety, while creating new industries and jobs. Delayed adoption risks missing economic opportunities and growing gaps in competitiveness and inequality with more digitalised countries.

In road transport, digitalisation enables new business models that support accessibility and sustainability. Mobility-as-a-Service (MaaS), or combined mobility, lets users subscribe to multiple transport options instead of relying solely on private vehicles. By integrating public transport, car-sharing and micromobility on digital platforms, travellers can plan, book and pay seamlessly.

Similar tools are transforming freight. Digitalisation and data sharing increase loading efficiency and free capacity in existing infrastructure through real-time traffic and cargo management, lowering costs and reducing vehicle activity without compromising service.

Roadmap

Opportunities to improve transport efficiency and cut emissions can be grouped along two axes: national and municipal. At both **national** and **city** levels, staged policies (**short-term** to 2030, **medium-term** to 2035 and **long-term** from 2040 and beyond) can speed adoption of **clean vehicles and fuels** (including electricity) and drive **system-wide, multimodal** improvements.

High-priority actions for sustainable transport at the national level

Short-term (by 2030)	Medium-term (by 2035)	Long-term (2040 and beyond)
Clean vehicles		
• Index gasoline and diesel taxes to inflation • Adopt Euro 6/VI standards and technical inspections on imports • Adopt and enforce more stringent in-use vehicle laws (e.g. emissions, speed limits) • Adjust vehicle import duties to more directly reflect vehicle fuel consumption performance • Develop EV and charging targets and deployment plans • Increase enforcement of in-use vehicle operations • Improve data collection, validation and reporting of in-use vehicle fleet	• Design and implement supply-side regulations (e.g. fuel consumption standards or EV sales requirements) • Increase taxes on fossil-based transport fuels, use revenues to finance transport infrastructure, public / non-motorised transport, and charging infrastructure • Consider fleet renewal incentives (e.g. targeted subsidies for EV purchases) • Phase out import tax exemptions for hybrids, PHEVs and EVs; phase in exemptions for zero-emission trucks • Develop EV battery collection and export/recycling capacity	• Mandate phase-out of ICE vehicle sales, then in-use fleet, starting with cars and buses • Enable energy aggregators to use EVs for energy arbitrage (V2G as mobile energy storage) • Develop incentives for circular and low-carbon EV batteries and materials (e.g. steel, aluminium) • As the vehicle fleet electrifies, transition from fuel taxes to road use charges (e.g. distance-based pricing or congestion charges) • Promote due diligence in EV battery supply
Multimodal		
• Boost multimodal cargo handling capacity by investing in port expansion projects (e.g. at Anaklia and Poti), and multimodal hubs, especially along the Middle Corridor • Implement rail reforms to meet EU accession requirements • Identify and develop strategic rail projects, e.g. freight hubs and high-speed passenger corridors • Adopt weigh stations and road tolls for trucks on highways • Survey best practices for truck electrification	• Adopt road tolls for cars on major highways • Transition economically unviable and low frequency rail operations to electric buses and trucks • Increase and differentiate road tolls to reflect infrastructure upkeep and environmental costs (including exemptions for electric vehicles, to be phased out as their fleet shares grow) • Earmark public revenues (e.g. from road tolls) to subsidise passenger rail fares and support railway maintenance and improvements	• Develop a holistic plan to fund infrastructure based on social costs and benefits that transitions from fuel taxes to distance-based and/or congestion pricing • Target subsidies for rail and bus to low-income segments, while ensuring that public transport competes on quality, comfort and speed

Nationally, transport decarbonisation features in key strategies on energy, climate and development, including Georgia's Nationally Determined Contribution (NDC), Climate Strategy and Action Plans, Long-Term Low Emission Development Strategy and Integrated National Energy and Climate Plan. Ahead of COP30, the annual United Nations climate summit, the Ministry of Environmental Protection and Agriculture updated the NDC and related policies. The 2024-2025 Climate Action Plan highlights energy and climate priorities, with transport measures playing a central role.

High-priority actions for sustainable transport at the city level

Short-term (by 2030)	Medium-term (by 2035)	Long-term (2040 and beyond)
Clean vehicles		
• Leverage international finance to invest in electric fleets and public and depot charging • Leverage international finance to coordinate joint procurement of e-buses and public EV fleets and charging infrastructure • Develop and implement "soft" incentives for EVs (e.g. reduce registration taxes, parking fees) • Increase enforcement of emissions for in-use fleet, increase fines for violations • Trial zero- or low-emissions zones and/or combustion car bans in Tbilisi	• Install smart meters and trial time-of-use or two-tier electricity pricing before deploying these at a national level • Require fuel stations to provide EV charging • Establish zero- or low-emissions zones and/or combustion car bans in major cities • Promote coordination among DSOs, CPOs/MSPs, demand aggregators and public transport authorities, to exploit vehicle-electricity system integration opportunities	• Further increase and differentiate parking fees • Develop regulations and/or incentives to accelerate the deregistration of conventional ICE vehicles, starting with the highest polluting and oldest vehicles • Designate EV-only parking areas; decommission and repurpose petrol stations • Trial new policies, technologies and business models, such as vehicle-to-grid (V2G), congestion charges, automated and connected vehicles, etc.
Multimodal		
• Finalise and bring into operation metro, Bus Rapid Transit, priority bus lane and non-motorised transport projects already underway • Leverage international finance to optimise, connect and coordinate multimodal transport, including public transit (buses and rail) and non-motorised transport (walking and cycling) • Restructure ownership, operations, and routes of Marshrutkas and public buses (including Bus Rapid Transit) • Develop and implement integrated urban and transport design (e.g. "superblocks," traffic calming) in Tbilisi, Kutaisi and Batumi • Design and conduct recurring travel and/or activity surveys	• Adopt dynamic parking pricing, promote efficient use of space to generate revenue • Continue to improve and integrate public bus and Marshrutka routes, schedules, and access • Develop and implement urban planning across major cities to improve safety and mobility by encouraging walking and cycling • Restrict access to certain districts to electric trucks or pedal-assisted electric bicycles • Improve service in public transit, aiming to align with international best practice • Allocate public revenues (e.g. parking fees) to fund e-bus and public fleet procurement, and install publicly accessible charging infrastructure	• Renew fleets; modernise and extend public transit networks based on projected demand • Secure public revenue to ensure financial sustainability of high-quality public transit • Pursue a "15-minute city" wherever viable • Adopt the European Union's "Vision Zero" goal of eliminating road deaths by 2050 • Pedestrianise high-value cultural areas and high-density commercial districts • Explore opportunities for economic and efficient paratransit using Automated Vehicles (AVs),

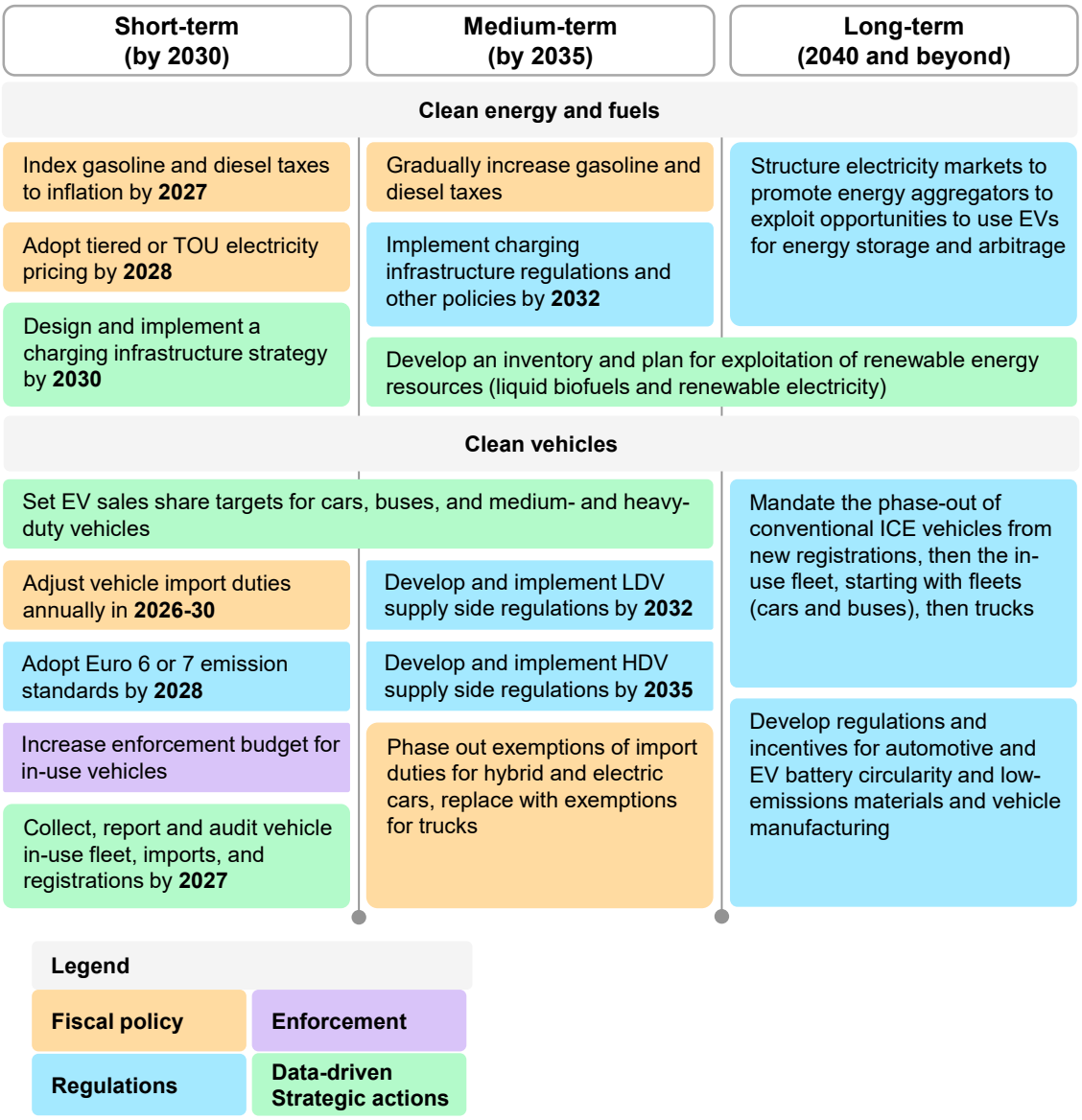
At the municipal level, the Tbilisi Transport Plan, along with Batumi's implementation of its Sustainable Urban Mobility Plan (SUMP) and Kutaisi's development of its own SUMP, guide safer, more diverse mobility options while reducing congestion and emissions. Monitoring these efforts will provide lessons, with successful measures serving as models for other cities.

A national strategy for clean vehicles and fuels

Georgia has made significant progress in reducing emissions from its vehicle fleet and improving the efficiency and emissions performance of imported cars. Near-term (to 2030) fiscal, regulatory and planning actions build on current momentum, while medium-term policies (through 2035) can align Georgia with global best practice. Long-term strategies (2040 and beyond) leverage Georgia's strengths to innovate in sustainable, efficient mobility.

Focusing on energy and fuels, rapid electrification of road vehicles can cut pollutants and greenhouse gas emissions. Greater use of biofuels in combustion vehicles can further reduce oil imports, boost domestic production and even open the door to fuel exports for shipping and aviation to the European Union.

A national clean vehicles and fuels strategy: timeline for implementation and milestones



Near-term actions (to 2030) fall into four categories:

- **Establish fiscal policies that align price signals with strategic goals** and that tap the potential for competing technologies to improve efficiency, thereby reducing costs and pollutant and climate emissions.
- **Implement stricter regulations on the roadworthiness of the in-use vehicle fleet**, supported by increased allocation of budget and resources to in-use vehicle enforcement and improved data collection.
- **Design and implement near-term regulations that require imports of more efficient and cleaner vehicles**. Options include corporate-average vehicle efficiency standards and EV sales requirements, both targeting vehicle importers.
- **Develop deployment projections, plans and targets for EVs and charging infrastructure**. These can inform stakeholders across the EV value chain, including electricity providers (e.g. distribution system operators), charging point operators and EV importers.

Fiscal policies and regulations can accelerate clean vehicle adoption and road sector electrification

Fuel and energy pricing

Georgia should start by indexing gasoline and diesel taxes to inflation, with gradual increases providing a clear price signal for buyers. Clearly communicating the rationale and schedule for tax increases, as well as transparently using the revenues generated to ensure equitable outcomes (e.g. through direct tax reductions for rural populations or vocations that depend on vehicles, or by funding public transit or other transport infrastructure projects) can build trust and minimise opposition. By 2030, Georgia should aim to align with EU Energy Tax Directive minimums and adjust fuel taxes relative to purchasing price parity (PPP) benchmarks. **This recommendation aligns with NECP measure EE-13**, which proposes a GEL 250 per tonne increase (around GEL 0.185 per litre for gasoline and GEL 0.21 per litre for diesel).[50]

Electricity tariffs should better reflect supply and demand. Day/night and, eventually, time-of-use (TOU) pricing can improve the economic competitiveness of operating EVs by enabling EV owners to charge during off-peak times. It also encourages more efficient use, strengthens network stability and reliability, and lowers the cost of supplying electricity.

[50] Assuming a density of 0.74 kg/litre for automotive gasoline, and 0.84 kg/litre for automotive diesel fuel.

Georgia's NECP supports smart meter rollout, with phased adoption (60% coverage by 2030, 80% thereafter), enabling household and business savings over time. Economic modelling conducted for the NECP suggests that adopting TOU tariffs in the residential and service sectors could yield significant cost savings for both sectors. Under conservative assumptions (i.e. high valuation / probability of costs, low valuation of benefits), the savings are negligible in initial years, but grow over time. Scenario modelling of TOU tariffs advises a "smooth and slow" introduction of smart metering, reaching 60% of users by 2030, gradually increasing to 80% penetration.

Vehicle import duties

Import duties should align with emissions and efficiency goals while generating revenue. Differentiated taxation could follow one of two potential designs, and can be differentiated based on other vehicle characteristics, such as vehicle engine size (as is currently the case in Georgia), kerb weight or footprint. Options are:

- A "feebate" structure, with specific targets based on one or multiple performance metrics (e.g. CO_2 emissions per kilometre of second-hand vehicles imported on a given year, or emissions category, such as Euro 6), coupled with a charge/credit scheme.
- A ceiling on specific fuel consumption or CO_2 emission thresholds per kilometre, differentiated based on weight or footprint. This is effectively a Minimum Energy Performance Standards (MEPS) structure.

The latter is simpler to implement, avoiding the need for government accounting, enforcement mechanisms, and designing and managing a charge/credit scheme. However, the former would be more effective in achieving desired outcomes. Both could be designed to be self-financing and even generate government revenue.

Current exemptions to EV import duties could be extended to value-added tax (VAT) and discounts could be offered on mandatory technical inspections. Exemptions – initially for conventional hybrids and later for plug-in hybrids – should be phased out. Import duties on high-emitting, high fuel-consuming combustion vehicles should rise, and they should be indexed to fuel economy and Euro rating, with separate structures for light-duty, buses and trucks.

Implementing differentiated taxes requires tracking vehicle imports and new registrations (both new and used), including fuel economy and emissions ratings. This requires improved data collection, validation and reporting, which is also a recommended as a key short-term action.

Georgia's NECP measure EE-16 proposes higher excise taxes on older imports by 2030. It recommends increasing taxes on imported vehicles older than

12 years by 200%, on vehicles 10 to12 years of age by 120% to 160%, and on vehicles 6 to 10 years of age by 14% to 80%.

The NECP measure (EE-14) proposes incentives for EVs/hybrids. However, a blanket extension of existing EV/hybrid exemptions are estimated to cost GEL 90 million (about USD 33 million) in lost revenue by 2030 – an unsustainable burden to the public purse. As noted in the NECP, such incentives would lower household car-purchase costs, but without price or income conditions, the gains would accrue mostly to high-income households. Targeted incentives for heavily-used vehicles (i.e. fleets) would be more effective. As EV prices fall, exemptions can be phased out earlier while keeping EV duties lower than for internal combustion engine (ICE) cars.

Georgia has commissioned and published research on the costs and benefits of different vehicle tax incentives. This analysis will need regular updating: As battery costs fall and more affordable EVs (new and used) enter the market, exemptions could be phased out earlier than 2030, while keeping duties lower than for conventional ICE cars.

Vehicle import and registration regulations

Emissions standards: Georgia should adopt Euro 6/VI standards on vehicle imports by 2028.

EV battery capacity standards: As with conventional internal combustion engine (ICE) vehicles, EV imports should be subject to minimum standards on EV battery capacity and durability requirements. To ensure that used EVs entering the country are of sufficient value and durability, battery capacity for all imported EVs should be tested to be above a certain minimum threshold (e.g. 75%). To reduce costs, companies could offer EV battery testing as a commercial service to vehicle importers, with the government ensuring that testing procedures meet technical standards.

Data to inform efficiency labelling: Data on rated fuel consumption and other basic technical characteristics (e.g. engine size, kerb weight, vehicle footprint) can serve as the basis for vehicle efficiency labelling. A robust labelling system can then inform rankings of available models based on energy or electricity consumption, and inform consumers, helping them to make better choices. These data are also required to serve as the benchmarks for cost-benefit assessments and to inform policy design for supply-side regulations.

Mandatory EV share for vehicle fleets: Heavily utilised vehicles in government, public and commercial fleets offer the best economic and environmental payback. Many national, subnational (i.e. state or provincial) and municipal governments require such fleets to purchase minimum shares of zero- or low-emissions

vehicles. The European Commission is also reportedly considering regulations requiring car fleets to shift new purchases entirely to EVs by 2030, five years ahead of the zero-CO_2 emissions standards for cars and vans. Georgia, led by Tbilisi and Batumi, should phase in similar rules, with smaller cities following within five to 10 years.

Early efforts targeting fleets have proven effective. Fleet vehicles typically have overnight off-street parking, making installation and use of depot charging cost-effective. Most daily operations can be met with around 80% of battery capacity, while high-use fleets like taxis may need fast charging at key locations. Focusing on heavily utilised vehicles shortens the payback on upfront investments needed for battery electric vehicles (BEVs) and charging infrastructure. Clear regulations, reliable budget allocations (e.g. from import duties), together with financing from multilateral development banks and international financial institutions can further reduce costs.

The EV Task Force should spearhead an effort to design bulk procurement of electric buses and tendering of their operations to reduce costs and administrative burdens, working closely with Georgian cities. Tenders should ensure interoperability and avoid technology lock-in.

Public procurement rules requiring minimum EV shares provide a strong policy lever, but mandates could also extend to private operators such as taxis, ride-hailing or corporate minibuses. Targeted public support (e.g. low-interest financing) may be needed for smaller operators.

Mandatory EV share for two- and three-wheelers: Georgia's motorcycle fleet is small (less than 10 000). Most motorcycles are imported from India, the United States and Ukraine. Given their safety and emissions impacts, strict regulations are justified, including bans or high import duties on ICE motorcycles, while duties on electric motorcycles and e-bikes should be waived. A regulation could also require that motorcycle importers bring a gradually increasing share of electric scooters and motorcycles into Georgia.

Annual vehicle circulation/registration tax

Annual circulation fees should be introduced to allow vehicles to remain on the road. In addition to the periodic technical inspection, which is not required for vehicles less than four years old, the annual registration process should carry a modest fee – enough to cover administration and support domestic scrappage and recycling industries, including training for EV battery handling. Registration revenues can be used to substantially improve data collection and quality of tracking of the in-use road vehicle fleet. It is important to keep online registration simple. Establishing this system could also provide a basis for further monitoring

(e.g. odometer readings) and to inform the design of future fiscal measures, like distance-based pricing of the in-use fleet.

In-use fleet regulations

Tighten rules for the in-use fleet, targeting near-term alignment with European safety norms and EU emissions standards by the 2030s. Stronger enforcement of existing laws (emissions, speed limits) will require larger budgets for traffic police and equipment, partly or fully offset by fines. Georgia should aim to converge with EU inspection and maintenance norms by 2030. This recommendation aligns with EE-15 in Georgia's NECP.

Data

Improve data collection, validation and transparency. Georgia's National Statistics Office, through its centralised data portal, along with air quality monitoring and other topic-specific portals on road vehicles and fuels, provides timely, transparent, and user-friendly public data, setting a benchmark for the South Caucasus region. Building on this, Georgia can further enhance the accuracy, transparency and relevance of transport data to support evidence-based decision-making.

Collect and audit detailed vehicle import and registration data. Public reporting of key technical details (e.g. make, model, year, trim, kerb weight, engine type, fuel consumption, emissions standard and exporting country) can improve policy implementation and detect anomalies and violations. Some of these parameters are already publicly available for passenger cars, but more granular data is needed for trucks and buses (including country of origin, model year, pollutant emissions, Euro standard (or equivalent) emissions rating, gross vehicle weight, engine power/size and axle configuration). These data can guide vehicle-efficiency labelling in the short term and inform supply-side regulations in the 2030s.

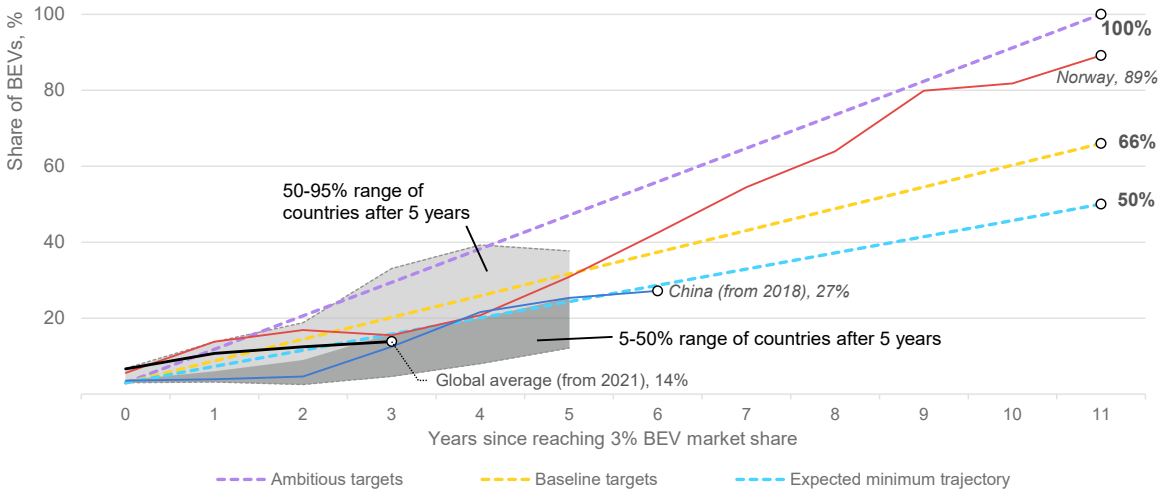
Improve accuracy and validation for data on in-use fleets and transport activity. Accurate information on annual mileage by vehicle type, powertrain and age, as well as road and rail freight operational statistics (mileage, representative loads, cargo type), is needed to inform and improve benchmarks, projections and policy design. Detailed fleet and operational data at national, regional and local levels can inform urban planning, modal shift and freight strategies. Partnerships with universities, and the use of grants or public tenders, can reduce costs and tap domestic expertise.

EVs and charging infrastructure – planning and target setting

Targets for electric vehicles: Aspirational EV targets can guide the transition to a zero-emission fleet. As sales rise, binding requirements – like those in California, Canada, and the United Kingdom – have proven effective in aligning stakeholders across the EV value chain, including distribution system and charging point operators, EV battery and vehicle manufacturers (and their suppliers) and recyclers. Targets set now should build ambition for mandatory sales requirements in the 2030s.[51]

This roadmap proposes **minimum, baseline and ambitious targets,** expressed as shares of new registrations (including imports of new and used vehicles). Based on trends for EV market adoption across 32 markets, Georgia could see half of new light-duty registrations as battery electric vehicles (BEVs) by 2035. This implies a 29% BEV share by 2030 – well above the 5% target in the 2024-2025 Climate Action Plan. Georgia should raise its ambition to at least two-thirds EVs in new registrations by 2035 (baseline trajectory). Ambitious targets aligned with the Paris Agreement – putting Georgia's light-duty road transport sector on a path consistent with keeping global warming to "well below 2°C" – would require nearly all newly registered vehicles to be BEVs by 2035.

Battery EV new registration shares and recommended light-duty EV targets for Georgia



IEA. CC BY 4.0.

Note: Grey boxes show the increase in battery electric vehicle (BEV) share in new registrations across 32 national markets where the BEV share has exceeded 3%.

Source: IEA (2025), Global EV Data Explorer (accessed 22 August 2025).

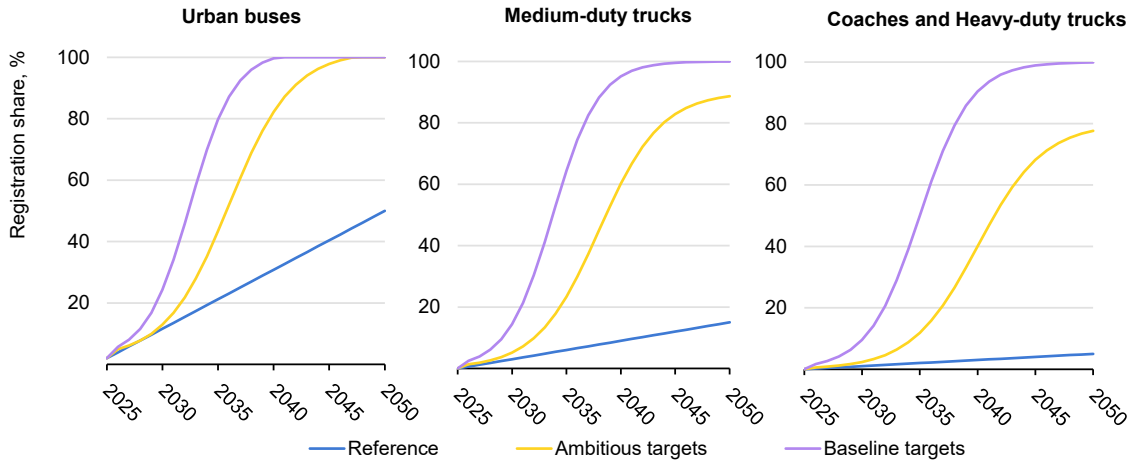
[51] The fate of California's and Canada's standards is uncertain as of the drafting of this report, given the US Congress' repealing of ACCII and ongoing legal challenges to California's waiver (Section 209) of the Clean Air Act, as well as Canada's pause of the EV Availability Standard requirements for 2026.

Targets and annual progress should guide the design and ambition of supply-side regulations in the medium term (to 2035), as detailed in the following section.

Buses and trucks: Projections for medium- and heavy-duty vehicles are more uncertain than for cars. Urban buses are the exception: They are well suited for electrification with depot charging, and sales shares are already in the double digits globally, with some cities having already transitioned entire fleets. Intercity buses and trucks still lag behind, but are also reaching high single-digit or low double-digit shares in many countries.

Rising sales of battery electric trucks reflect national circumstances, often driven by industrial policy and efforts to cut oil import dependence (e.g. China, the European Union, the United States, India and other major importers or manufacturers). Although trends remain uncertain, this roadmap sets registration-share targets for urban buses and coaches, as well as medium- (N2) and heavy-duty (N3) trucks. These targets follow a no-policy (**reference**) trajectory and are designed to ensure Georgia meets its conditional NDC targets (**baseline**). They also define an **ambitious** EV registration share that would align the country's heavy-duty road transport sector with Paris Agreement goals.

EV new registration sales share and recommended light-duty EV targets for Georgia



Develop a strategy for public charging infrastructure. Technical regulations give certainty to suppliers and users. Georgia should codify AC and DC charging standards, and align plug, hardware and communication protocol standards with international norms. Charging standards should accommodate the diversity of EV imports to Georgia, recognising the need to provide coverage for models coming from the United States, European Union, Japan, Korea and China.

Private sector investment requires clear incentives and deployment certainty. Permitting for siting, construction and grid connection should be streamlined, starting with charging in public bus depots and off-street sites (garages, workplace lots, apartments) in cities. Planning for the 2030s should extend to highway charging for cars, coaches and trucks, based on reliable EV adoption projections. A deployment strategy can support regulations by 2035 to ensure minimum coverage, equitable access and investment certainty.

Incorporate EV projections into grid planning. Adoption projections for light- and heavy-duty EVs must be integrated into electricity grid planning, identifying both spatial and temporal demand. Focus should be on:

- cities, where light-duty EVs and buses will be first adopted, and industrialised regions and freight corridors (e.g. the East-West Highway and the main north-south corridors), where road freight activity will be concentrated and where public funds can crowd in private investment
- regions with weak commercial viability for high-speed charging, where regulations and targeted public funding are likely to be needed to guarantee equitable access and prevent under-investment

Medium-term actions (to 2035) are the following:

- Gradually increase taxes on fossil-derived transport fuels on a clear annual schedule, allocating a share of the revenues to public financing for EV charging infrastructure and/or electric bus procurement.
- Design, implement and enforce supply-side regulations, such as fleet-average fuel economy standards or EV sales requirements that target vehicle importers as the regulated entity.
- Adopt regulations and other supporting policies to ensure minimum charging infrastructure deployment for cars, buses and trucks.
- Phase out tax exemptions for hybrids and electric light-duty vehicles, potentially replacing these with exemptions for medium- and heavy-duty trucks.
- Develop regulations and/or incentives that promote domestic EV battery collection and export/recycling capabilities.
- Develop an inventory and plan to sustainably and strategically exploit natural resources to develop clean fuels for domestic use and export.

Increase taxes on fossil-derived fuels

Gradually increase taxes on fossil-derived transport fuels on a clear annual schedule, allocating a share of the revenues to public financing for EV charging infrastructure and/or electric bus procurement. Taxes on fossil-derived automotive fuels should be gradually increased to levels that align with their estimated

environmental, health, climate and other externalities. As already highlighted, benefits extend to reducing Georgia's dependency on oil imports (and related price volatility) and incentivising the adoption of EVs.

There is a potential negative impact on household incomes, as well as distributional and equity impacts. Therefore, it will be important to limit the regressive impact of fuel tax increases by ensuring that revenues are reported transparently and are allocated to improve mobility, including among adversely affected groups.

Note that this recommendation aligns with NECP measure EE-13, which proposes to increase the tax on gasoline and diesel for oil products and lubricants by GEL 250 per tonne of fuel.

Supply-side regulations

Fiscal incentives for EV and hybrid imports reduce public revenues. Supply-side regulations targeting vehicle importers as the regulated entity are the most effective way to reduce Georgia's oil dependence and CO_2 emissions.

Two main approaches exist:

- **Emissions and fuel-economy standards (sales- or registration-weighted)**: These performance-based standards set a metric based on the intended outcome. They thereby ensure ICE vehicles become more efficient and, once sufficiently stringent, bring EVs into the mix.
- **Minimum EV import/registration shares**: This requires importers to gradually increase the share of EVs they sell. Flexibilities like credit trading or banking can improve efficiency, but should be capped (as done, for instance, in the United Kingdom) to ensure effectiveness.

There are trade-offs between these two regulatory designs. The former would ensure that conventional ICE vehicles registered on Georgian roads continue to become more fuel-efficient, and once it becomes sufficiently stringent, it would also drive EVs into the pool of vehicle imports, while enabling importers to choose the mix of vehicles they bring into the country in a way that maximises profits. However, it would require that information on vehicle performance be systematically collected and standardised across different regional and national testing cycles, to provide a level playing field for imported vehicles. To date, this approach has been pursued only by New Zealand which required the development of conversion/harmonisation procedures.

An alternative is to require importers to gradually increase the share of EVs they bring in. Flexibilities, such as allowing the trading and banking of credits can improve the regulation's economic efficiency. But these should be limited (e.g. through caps or interest rates, as in the United Kingdom) to ensure the policy

effectively raises the share of EVs registered. The data requirements of a zero-emission vehicle (ZEV) import share mandate are far lower than those of a CO_2 or fuel-economy standard, making it simpler to design, implement, monitor and enforce.

In the 2030s, Georgia should shift from fiscal incentives (e.g. import duty exemptions, differentiated import duties) to regulatory tools, guided by market developments such as EV costs. The transition can begin with cars and urban buses, and later extend to trucks.

Charging infrastructure

Adopt regulations to stimulate charging infrastructure deployment. A mix of technical standards, policy regulation, public funding and fiscal support is needed to ensure rapid and equitable deployment.

Technical standards for hardware and software interoperability, communication protocols and performance specifications for components and assembled products are needed to ensure infrastructure is fit for purpose.

Minimum rollout requirements: Regulations similar to the European Union's Alternative Fuel Infrastructure Regulation (AFIR) help to mandate minimum coverage and capacity for both light- and heavy-duty vehicles (LDVs and HDVs). This complements supply-side vehicle rules and provides certainty of availability. Current benchmarks (such as the European Union's recommended ratio of one public charger per 10 LDVs) will shift as EV uptake grows, reflecting differences in road networks, congestion and use. Minimum capacity (in megawatts) and coverage – such as maximum distance intervals under the AFIR – should be tied to grid-planning assessments of charging needs for LDV/HDVs, based on geography and projected fleet size.

Tendering models: Competitive concession tenders should bundle multiple sites, requiring charge point operators (CPOs) to cross-subsidise less profitable, infrequently used locations with revenues from highly utilised chargers, ensuring broader and fairer coverage.

Fiscal and financial support: Public funds should back deployment in low-viability areas, which is essential for rapid EV uptake. Instruments such as partial credit guarantees can de-risk investment, while keeping commercial lenders as main financiers of CPOs.[52]

[52] To access public financing or incentives CPOs should also meet certain criteria, including: (i) **unified certification and standards** for the technical design of chargers, including component durability, communication protocols and data logging capabilities; (ii) **data transparency**, including real-time information about charger availability and functionality through open APIs so that third-party apps and services can provide information that helps EV drivers plan their trips; (iii) **minimum uptime requirements** for public chargers to be available and operational; and (iv) fair pricing and convenient payment.

Data requirements: To operate public or semi-public charging facilities, CPOs should be required to provide regulators with minimum data at every charging station – location, operational status, power rating and the charging standard of each plug. Geostat can integrate this into its geographic portal to create a national charging information platform.

Transition to differentiated import duties for electric trucks

Once regulations on vehicle importers are in place, fiscal policies should play a secondary role. Import duties and taxes should be revenue-neutral, ideally differentiated by vehicle performance, with high rates on high-emitting vehicles (whether measured by CO_2, local pollutants, or both) to also generate public revenue.

As EVs gain a sufficient share of imports and registrations, import duty exemptions should be phased out, with exceptions instead targeting electric trucks and coaches, where adoption lags behind LDVs and urban buses. Differentiated import duties on these heavy-duty vehicle categories can help to ensure that exemptions do not reduce revenues.

EV battery collection and export or recycling

Georgia should develop regulations and incentives that promote domestic EV battery collection as well as exports and recycling. An assessment of used EV battery volumes should be informed by data and projections of EV imports. This can inform the need for centralised EV battery collection procedures, partnering with car dealerships and service centres, and safe transport protocols to a storage facility. Georgia should coordinate with neighbouring countries to determine the economic viability of establishing itself as a regional hub for initial EV battery treatment (e.g. grinding to black mass) or for the repurposing of used EV batteries for second-life grid applications.

Policy design can draw on international best practices and funding, including the GEF-8 projects under the United Nations Environment Programme on battery treatment, disposal and recycling, as well as the Zero-Emission Vehicle Transition Council's ZEV Rapid Response Facility.

Low-emissions fuels strategy

Georgia has strong potential to use renewable electricity and biomass to produce sustainable biofuels and e-fuels for transport, including aviation and shipping. Ensuring a sustainable biomass supply will require supportive policies and incentives to promote domestic production and use.

The European Union's 2018 revision of the Renewable Energy Directive (RED II) strengthened sustainability criteria and set a 14% renewables target for road and

rail transport by 2030, with a 3.5% target for advanced biofuels (Annex IX Parts A and B) and a 1.7% cap on certain feedstocks (Annex IX Part B).[53] Georgia, as part of the Energy Community, must define renewable energy targets for 2030, outlined in the 2024 Draft Law on Renewable Energy. The United Nations Economic Commission for Europe (UNECE) and World Experience for Georgia (WEG) provide recommendations and best practices, including:

- **Advanced biofuel targets with penalties** for fuel suppliers, specified as volume or emissions-intensity reduction targets, as per the European Union's Fuel Quality Directive. This is the most common approach, and has been used in the Czech Republic, France, Greece and Ireland.
- **Tax exemptions** – such as zero excise duties or reduced carbon and energy taxes on biofuels – with reductions tied to the share of biofuel in the fuel mix. Examples include Austria, Croatia and Latvia.

In 2021, renewables accounted for 7.3% of the transport energy mix. Advanced biofuels accounted for 27% of the European Union's total biofuels demand (12% from biofuels produced via pathways listed in Annex IX, Part A, and 15% via Part B pathways). Together, conventional and advanced biofuels made up nearly 90% of all renewables in transport, with the remaining share coming from renewable electricity.

Georgia's domestic capacity is small: Since 2018, **Biodiesel Georgia** has produced around 1.2 kilotonnes (kt) of biodiesel annually from used cooking oil and canola, blended into fossil diesel. The company is seeking EUR 3 million to expand capacity to 3 kt – enough to meet around 0.6% of 2023 diesel demand – though securing sustainable feedstocks remains a challenge.

The **Kulevi refinery,** currently under construction, could supply renewable diesel and biojet kerosene, taking advantage of European Union incentives under RED III, the ETS/ETS2 and ReFuelEU Aviation.

Long-term actions (in the 2040s and beyond) include:

- **Designing electricity markets that let aggregators participate** by using EVs as mobile, decentralised storage, thereby enhancing flexibility, reliability and the delivery of low-emissions electricity at lower costs.
- **Phasing out high-emitting vehicles through mandates and other tools**, starting with new registrations and eventually the entire fleet.

[53] In spring 2023, the European Parliament and Council revised the RED II 2030 targets as part of the Fit for 55 legislative package, updating it to the RED III. RED III allows compliance through either a 13% reduction in the emissions intensity of transport or achieving a 32% share of renewables in final energy mix for transport. This amendment also introduced a new target for renewable fuels of non-biological origin (RFNBOs). Georgia is not required to transpose RED III.

- **Developing low-emissions and circularity policies** to boost automotive and EV battery recycling and further reduce life-cycle emissions from vehicles, infrastructure and operations.
- **Transitioning from fuel taxation to road use charges and tolls**, including distance-based pricing and congestion charges.

Electricity market design

Ensure that electricity markets promote EVs as vectors for mobile energy storage and grid services. Technical, regulatory and market measures are needed to enable EVs to serve as pooled and mobile energy storage. These are needed to support aggregators, vehicle-to-grid (V2G) integration, and to create price signals for flexibility and arbitrage.

Electricity markets should allow aggregators – companies that pool EVs and their storage capacity – to participate in wholesale, capacity and ancillary service markets. Aggregators can provide multiple grid services, including energy arbitrage, peak shaving, backup power and frequency regulation. Regulations should recognise aggregators as official market actors, granting rights to bid, settle transactions and access balancing/flexibility markets. Transparent remuneration, regulatory certainty and consumer-protection frameworks are needed to define data sharing, responsibilities and liability while safeguarding EV owners' mobility, privacy and cybersecurity.

Technical standards must enable energy export from vehicles. International V2G protocols (e.g. ISO 15118, OpenADR) should be adopted, along with standardised smart-charging hardware and software and interoperable platforms for real-time data exchange between aggregators, DSOs and TSOs.

Markets should provide dynamic price signals (e.g. tiered or time-of-use pricing) to make EV participation economically attractive. Preliminary regulatory, technical and market design work can start immediately to enable future aggregator and V2G integration.

Phase-out of high-emitting vehicles

As more new cars, buses and trucks go electric, attention can shift to phasing out the most inefficient and polluting in-use vehicles. Policy options include in-use regulations and inspections (with enforcement and penalties), access restrictions, fleet renewal incentives and fiscal measures like differentiated tolls. The appropriate mix depends on context, including technology costs, equity, public budgets and priorities such as safety, local pollution and climate goals.

Circularity and low-emissions manufacturing

Following its successful implementation of world-leading CO_2 standards for cars and vans, the European Union is exploring policies to reduce emissions beyond the "use phase," covering vehicle and battery manufacturing and end-of-life impacts. For instance, the EU Batteries Regulation aims to lower EV battery carbon footprints, enforce social and environmental due diligence in supply chains, and increase circularity through mandatory recycling and mineral recovery targets. A proposed regulation replacing the vehicle end-of-life directive would encourage circular design; set minimum recycled-content standards; regulate vehicle deregistration, scrappage and trade; promote reuse and recycling of materials and spare parts; impose extended producer responsibility; and apply end-of-life rules to all vehicle categories.

Such regulations will need to extend beyond automotive suppliers to cover fuel, mining and material producers. Additional policies could target parts and vehicle manufacturers, using sector demand to encourage low-emissions materials without substantially raising costs for consumers.

If Georgia develops clean technology value chains, regulations or incentives to cut emissions and environmental impacts could confer competitive advantages. The country's low-carbon electricity and renewable energy potential would make locally produced batteries and components attractive in markets with carbon pricing or European Union-style carbon footprint thresholds.

Transition to road use charges

As the number of EVs and fuel-efficient vehicles increases, fuel tax revenues will fall, requiring replacement with user charges that reflect road use. Transitional measures such as registration surcharges or tolls can support EV adoption while preparing for full distance-based systems. Taxes should combine registration fees and distance charges, ideally varying by time and location to boost efficiency and equity. Phased implementation – from registration fees and odometer-based tolls to GPS-enabled schemes – provides a scalable way to sustain road financing and account for external costs.

Case studies, such as Slovenia, show how phasing from fuel excise to per kilometre charges can help anticipate and avert future revenue shortfalls. Mileage-based systems can better align revenue with infrastructure wear, congestion and emissions, while axle weight and congestion fees can further tie fees to actual road impacts.

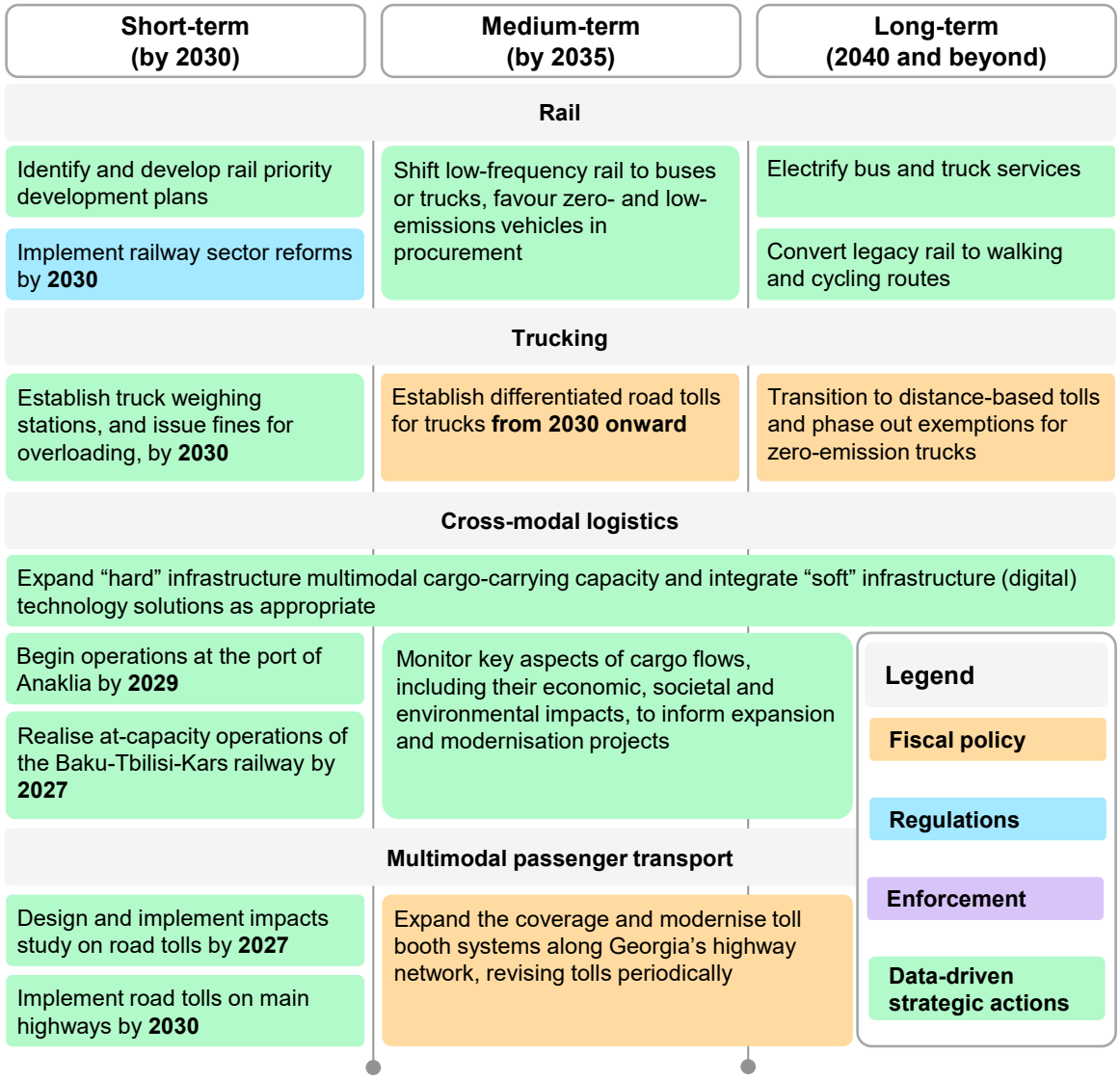
A national multimodal strategy

A national multimodal efficiency and environmental strategy could focus rail sector reforms, road freight efficiency, logistics improvements and modal shift, alongside

long-distance passenger transport options such as coach services, as well as pricing schemes that favour high-capacity intercity and high-speed rail over road transport.

Opportunities in each area are outlined below, followed by a summary of policy priorities along the roadmap timeline (short, medium and long term) as set out at the end of this section. A recommended timeline for specific actions is also discussed.

A national multimodal strategy: timeline for implementation and milestones



Railway reforms

Railway reforms and modernisation: Railway reforms are essential for modernising intercity and long-distance transport. Financial sustainability must be

balanced with affordability, convenience and attractiveness of rail, relative to other modes – for both passengers and cargo. This requires electrification of main lines, fleet modernisation and fiscal reforms. More stringent regulation and increased taxes on truck operations can encourage cargo carriers to shift freight to rail or multimodal options.

Infrastructure and rolling stock expansion: Modernising and expanding rail assets – locomotives, cars and tracks – should target the highest-priority projects, such as freight hubs and high-speed passenger lines along the east-west corridor, while ensuring sufficient capacity, scheduling and coordination for reliable passenger and cargo transport (**short-term – by 2030**).

Sector reforms and finance: EU-aligned reforms, backed by international climate and development finance, can connect infrastructure expansion, electrification and fleet modernisation to long-term economic sustainability. Technical and policy support from the Asian Development Bank (ADB) and the Agence Française de Développement (AFD) can help identify regulatory and administrative barriers to prioritise organisation reform. Reforms should include multi-year investment plans, asset maintenance strategies and transparency for operators (**short-term – by 2030**).

Electrification of diesel operations: Most of Georgia's rail network is already electrified. Remaining shunting operations should be electrified, and diesel corridors should be evaluated for economic electrification. Where this is not feasible, very infrequent and low-utilisation routes should be served by minibuses or buses (**short-term – by 2030**).

Medium- and long-term transitions: As electric fleet procurement becomes cost-effective, diesel rail should be gradually replaced with electric minibuses and buses (passenger service) or trucks (freight). Decommissioned rail lines could be converted to cycling and walking trails. Rural and infrequent diesel services should be replaced by electric buses and trucks to reduce costs while maintaining minimal service (**medium-term – by 2035**), with continued conversions of track for use by pedestrians and cyclists. (**long-term – 2040s and beyond**).

Trucking sector reforms

Reducing transport CO_2 over the long term requires focusing on road freight, which is set to overtake passenger traffic as the fastest-growing source of emissions. Measures include improving truck efficiency, optimising logistics and shifting freight to rail or intermodal transport.

Build and staff truck weigh stations: Georgia lacks weigh stations and weigh-in-motion systems, relying instead on occasional roadside inspections and border checkpoints. At these checkpoints, foreign-registered N3 category trucks are

required to pay a one-time transit fee to enter the country. In line with rising cargo flows, this fee increased in 2023 to GEL 350 (about USD 130) from GEL 200 (USD 75).

Strategic weigh stations along major freight corridors should be established. Station siting should account for ingress and egress points to national highways where most road freight transport activity occurs, while ensuring that alternative access points are monitored to prevent weigh station avoidance. Stations should record cargo volumes, truck types, and axle configurations, and deter overloading with fines high enough to be effective but not excessive. Data pipelines should ensure quality and integration into national statistics (**short-term – by 2030**).

Adopt weigh stations and road tolls for trucks: Weight- and axle-based tolls can fund road maintenance, with further differentiation for pollutant standards (e.g. Euro I–VI and Euro 7). Toll schedules should be set by 2030 and updated every two to three years. Zero-emission trucks should initially be exempt to incentivise adoption (**medium-term – by 2035**).

Distance-based taxes: The European Union's Eurovignette reform will introduce distance-based tolls that better reflect trip-level emissions. Georgia can adopt a similar policy, adapting it to national priorities and circumstances. Exemptions for electric trucks should be phased out gradually once they represent a substantial share (10% to 33%) of the fleet (**long-term – 2040s and beyond**).

Cross-modal freight and logistics

Capacity and resilience could be improved by upgrading "hard" and "soft" infrastructure, focusing first on increasing cargo handling capacity along the middle corridor.

Hard infrastructure development: Priority should be given to boosting cargo handling at Georgia's key ports, rail lines and intermodal terminals, with secondary focus on connectivity along the East-West and North-South Highways. Modernisation should target multimodal hubs at Batumi and Poti ports and container shipping at the planned deep-sea port at Anaklia. If transloading trucks onto flatbed trains is viable, pilot projects should demonstrate its effectiveness. Targets include:

- Meeting the announced 2029 target date for the Port of Anaklia to be operational
- Full implementation of the trilateral roadmap for increased cargo trade with Azerbaijan, Kazakhstan and Türkiye, and finalisation of the Baku-Tbilisi-Kars railway by 2027

Soft infrastructure development: Focus on proven digital technologies to improve logistics efficiency and harmonise technical regulations and procedures. Utilise systems like the Central Asia Regional Economic Cooperation (CAREC) programme's corridor monitoring system as well as its Advanced Transit System (CATS), where Georgia is a pilot country.

Middle corridor development: Address challenges such as limited port and transport capacity, complex institutional arrangements and inefficient border and customs procedures. Planning should involve private and international stakeholders, including neighbouring governments, and should consider China's growing interest in the corridor when negotiating terms for future financing and infrastructure projects.

Multimodal passenger transport

Intercity rail competitiveness: For rail to compete with road travel, it must offer faster door-to-door options and competitive pricing. Passenger trains typically receive scheduling priority on key routes, like the line between Tbilisi and Batumi. Ongoing rail modernisation should ensure high-use corridors provide reliable, affordable alternatives to cars and buses.

Highway tolls and revenue use: Toll revenue should fund road maintenance and support passenger rail subsidies. If rail cannot provide fast, reliable, frequent and cost-effective service along the east-west corridor by 2030, a targeted plan should address these gaps (**short-term – by 2030**).

Toll system study: By 2027, a study should be done to design a highway toll system, addressing equity, revenue potential and redistribution, booth placement, electronic payments, enforcement, carpooling incentives, and transparent use of funds (**short-term – by 2027**). Road tolls should be implemented by 2030, with electric vehicles potentially exempted or eligible for reduced rates (**short-term – by 2030**). Coverage, design and rates should be regularly reviewed based on policy and revenue needs.

As summarised above, **short-term actions (to 2030)**, across the areas outlined, are:

In rail:

- **Identify and develop strategic rail projects, including expanding and modernising assets**, prioritising the east-west corridor to enable high-speed and reliable transport of both passengers and goods (especially along the middle corridor).
- **Implement railway sector reforms**, as required by the European Union, and with the support of international climate and development finance.

- **Continue the rapid electrification of rail operations that still rely on diesel** – starting with those where it is economically viable – while developing plans to shift other routes to minibuses, buses or trucks.

In trucking:

- **Build and staff truck weigh stations** at key ingress and egress points to the domestic highway network as well as international road freight checkpoints. Data collected should be checked for quality and made available on the national statistics web portal (Geostat).
- **Establish a schedule for reviewing road tolls**, to be implemented in the early 2030s. The schedule should include a regular interval for revisions (e.g. every two or three years).

In cross-modal freight:

- Work toward the target launch date for the Anaklia deep-sea port, while ensuring it remains majority-owned by the Georgian state. Ensure also that port development, staffing and other economic functions are staffed by the Georgian workforce and benefit residents.
- Increase cargo trade with Azerbaijan, Kazakhstan and Türkiye by 2027 by running the Baku-Tbilisi-Kars railway at full capacity.

In multimodal passenger transport:

- By the early 2030s, prepare a targeted plan for rail along the east-west (Tbilisi-Batumi) corridor that makes services on it faster, more reliable, more frequent and cheaper than road.
- **By 2027, investigate the potential for a highway tolling system**, focusing on equity impacts, design aspects, revenue generation potential and user experience.
- **Road tolls for passenger cars should be implemented by 2030**. These can also serve as enforcement points for vehicles that do not meet minimum emissions standards. Consider exemptions or reduced fees in the near-term for intercity buses and EVs (including buses and cars).

Medium-term actions (to 2035), across each focus area, are:

In rail:

- **Diesel rail services should gradually be replaced with electric road vehicles –** electric minibuses or buses for passenger transport and trucks for freight – regardless of whether the rail company operates them directly. Convert rail lines to cycling paths and walking trails.

In trucking:

- **Road tolls for trucks** based on weight and axles would be a rational first step to financing road construction and maintenance. Tolls should be differentiated tolls by emission performance (i.e. Euro V-VI or Euro 7) to ensure costs of air pollution are internalised.
- Exempt zero-emission trucks (i.e. battery electric and fuel-cell trucks) from tolls to incentivise their adoption, at least through 2035.

In cross-modal freight:

- **Continue monitoring cargo flows and their economic, environmental and social impacts**, using the insights – together with strategic goals – to guide investment in both "hard" and "soft" cross-modal infrastructure.

In multimodal passenger transport:

- **Revise the design and expand the coverage of road tolls for passenger cars and buses**. Toll rates can be revised at regular intervals, depending on policy priorities and revenue needs for transport infrastructure. Exemptions for EVs and buses can be gradually removed once these vehicles represent more than 10% to 33% of the in-use fleet.

Long-term actions (in the 2040s and beyond), across each focus area, are:

In rail:

- **Replace rural and infrequent diesel train service with electric buses or trucks** to reduce costs while maintaining minimum levels of service. Consider converting tracks to cycling and walking paths.

In trucking:

- **Implement distance- and weight- based taxes**: Gradually phase out exemptions and fee reductions for zero-emission trucks once they become more common, representing a substantial proportion of the in-use fleet (roughly 10% to 33%).

A clean vehicles and fuels strategy at city level

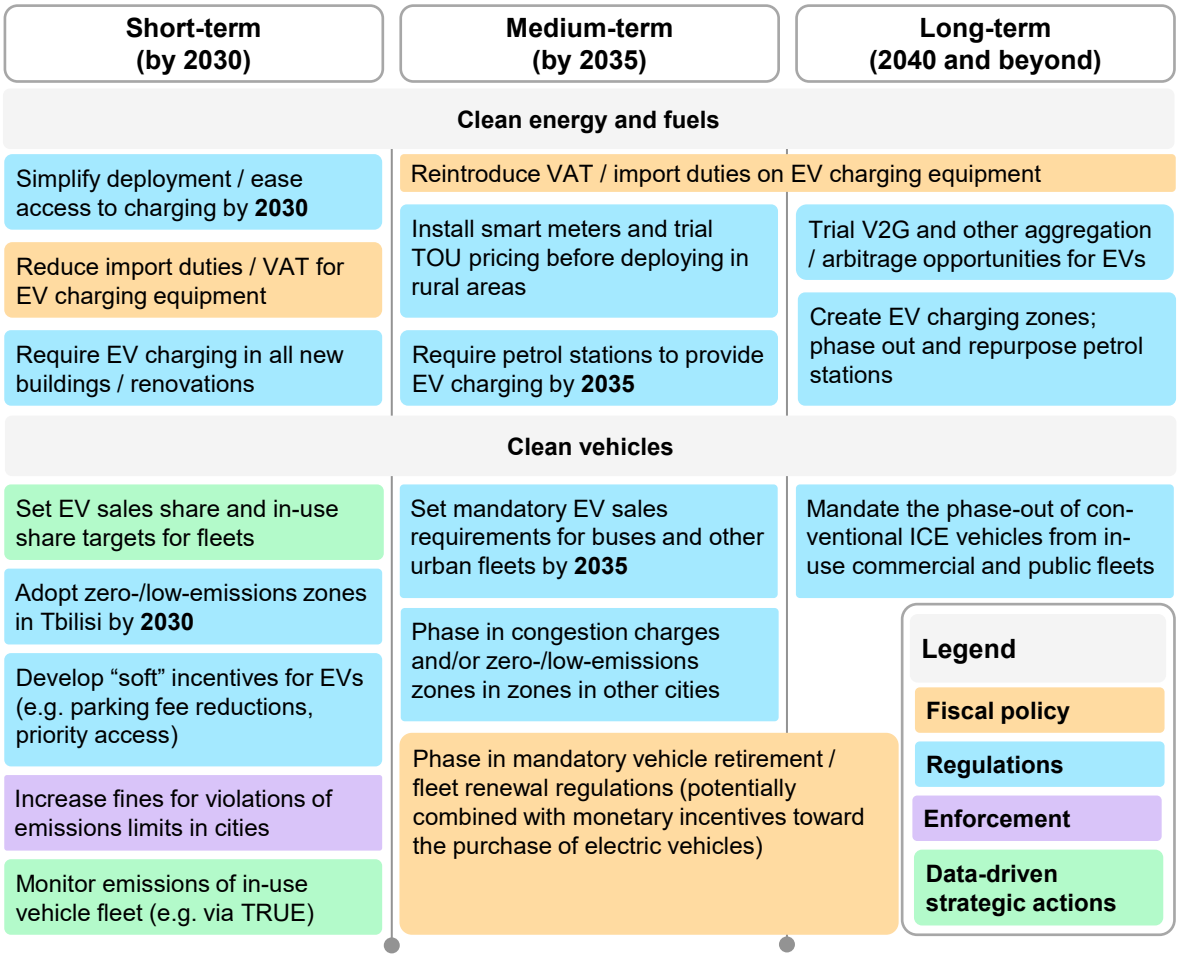
City-level strategies to improve vehicle efficiency and reduce emissions rest on three pillars:

- **In-use vehicle fleet monitoring and enforcement**, including setting up low- or zero-emission vehicle zones or congestion charging zones
- **Stimulating electric vehicle adoption**, given their clear efficiency, emissions and economic advantages

- **Facilitating the rollout of charging infrastructure**, ensuring equitable access along with convenience and reliability for EV users

Opportunities to advance on each of these aspects are outlined below, before summarising the policy priorities in terms of the roadmap timeline (i.e. in the short, medium and long term), as summarised at the end of this section. A recommended timeline for specific actions is also discussed.

A city-level clean vehicles strategy: timeline for implementation and milestones



In-use vehicle fleet monitoring and enforcement

Establish low- and zero-emission zones (ZLEZs): Tbilisi's urban mobility plan prioritises creating human-centred "superblocks," pedestrianisation and reallocating space from cars to people. Tbilisi and other Georgian cities should also implement targeted measures, such as ZLEZs or congestion charging, to incentivise cleaner private vehicles and fleets. EV waivers can be used initially, as has been done in other cities, but phase-out schedules for these waivers should be defined from the start. Well-designed ZLEVs improve traffic flow, reduce

pollution, and generate revenue without harming local commerce – as shown by the experience of New York, London and other cities. Tbilisi should take the lead by introducing a ZLEZ or congestion charge (**short-term – by 2030**), with other major cities following suit, drawing on lessons from the Tbilisi pilots (**medium-term – by 2035**).

Enforcement and monitoring: Step up enforcement of emissions and traffic regulations, review speed limits (both of which are recommended in the Tbilisi Transport Plan and in the SUMPs of other cities) and fund additional monitoring equipment as well as traffic police – backed, if needed, by international support or higher fines (**short-term – by 2030**).

Note that increased enforcement of vehicle emissions is also recommended at the national level, in measure EE-15 of Georgia's NECP.

Monitor in-use vehicle emissions: Tbilisi authorities should collaborate with the Real Urban Emissions (TRUE) Initiative[54] to establish remote sensing and emissions monitoring stations. Real-world data can support pollutant source attribution estimates and research to link these to health impacts, as well as clean vehicle policies (**short-term – by 2030**).

Fleet renewal and vehicle retirement mandates: Gradually tighten roadworthiness, emissions and efficiency standards for the in-use vehicle fleet, removing vehicles that fail to comply. Create tax incentives for EV purchases and communicate clearly about the public health, safety and fiscal impacts to build public acceptance (**medium-term – by 2035; long-term – 2040s and beyond**).

Accelerate electric vehicle adoption

"Soft" incentives for EVs: Short-term incentives – such as reduced or waived parking fees – and rules requiring EV charging near lot entrances or commercial outlets can boost EV adoption (**short-term – by 2030**). Giving EVs access to priority transit lanes is **not** recommended, as it undermines public transport efficiency. Benefits such as free parking or reduced fares should eventually be phased out once EVs make up roughly one-third of the fleet (**medium-term – by 2035**).

EV targets for fleets: Set mandatory new registration or fleet targets prioritising heavily used public transit buses (e.g. Tbilisi's Bus Rapid Transit corridors)

[54] The TRUE Initiative is a partnership between the International Council on Clean Transportation and the Global Fuel Economy Initiative (GFEI) that "supports cities worldwide to develop effective air quality and climate policies with independent real-world vehicle emissions data, technical analysis, and expert advice." City projects started in Paris in London, and have since expanded to Kampala, Brussels, Gliwice, Gurugram, Warsaw, Sofia, Seoul, New York City, Jakarta, Mexico City, Abu Dhabi, Bogotá and Delhi. Projects that monitor heavy-duty trucks along major road freight corridors have also been developed in the United States, United Kingdom and the European Union. The TRUE database now includes more than 70 million vehicle records on four continents.

alongside commercial operators like taxis, urban delivery vehicles and public or government fleets (**short-term – by 2030**).

Target stringency should reflect the total costs of ownership and cost-benefit analysis, aiming to accelerate electrification while respecting budget constraints. This contrasts with Georgia's current emphasis on Euro 6 diesel and compressed natural gas (CNG) buses (for instance, MT-7A in the NECP), which risks locking in fossil-fuel infrastructure. Case studies, such as the TransJakarta electric bus system, show that targets plus regulations provide policy certainty, which can attract financing from international lenders.

Joint procurement of electric buses: Municipalities – coordinated by national authorities and led by the EV Task Force – can design and issue bulk tenders for e-buses and depot charging. Past bulk bus purchases for municipalities, led by the Prime Minister's office, have often lacked coherence and coordination: municipalities frequently learned of purchases when the Prime Minister announced them, leaving them unprepared for the tendering of operational and maintenance contracts, and unable to influence decisions on fleet size or technology.

Bulk procurement is a proven way to reduce costs and improve administrative efficiency – as demonstrated by India's multi-city bulk tender under its Grand Challenge programme. It achieves this through aggregating demand, standardising procurement and improving pricing terms, as well as improving administrative, legal and project efficiency. Aggregated demand can also help to meet the key requirement of project scale for financing from multilateral development banks and international finance institutions (**short-term – by 2030**).

Mandatory fleet targets: Cities should set ambitious sales goals for EVs and targets for in-use EV shares in public transit, government and municipal fleets, as well as commercial operators, including taxis and transport network companies (**medium-term – by 2035**).

Retiring ICE vehicles: Once EVs exceed roughly 50% of the in-use fleet in a city or region – for a given category such as cars, buses, or medium- or heavy-duty trucks – rules for phasing out and scrapping of ICE vehicles should be established. The pace of retirements should strike a balance between operational needs, fiscal impacts and emissions benefits (**long-term – 2040s and beyond**).

Promoting deployment of charging infrastructure

A cross-sector EV taskforce should coordinate the removal of administrative and permitting barriers and plan rollout of urban EV charging infrastructure. Key actions include:

- **Identifying barriers**: Regulatory, economic and physical constraints to network access, permitting, ownership and grid capacity should be assessed and solutions proposed by 2027 (**short-term**).
- **Prioritising locations**: Charging deployment should be staged, starting at high-utilisation sites (e.g. parking garages, apartments, shopping centres and park-and-ride lots) with a city-level strategy developed by 2027 (**short-term**).[55]
- **Accelerating deployment of private, workplace and public charging**: Regulatory and fiscal incentives – such as reduced VAT and import duties and favourable financing – should initially target off-street parking. This includes parking garages, large employers' lots (including government ministries) and apartments complexes, which benefit from high utilisation, cheaper installation and reduced permitting and grid-connection costs. They also offer a more clearly defined business model than on-street parking. Grid upgrade costs could be covered by distribution system operators and government funding (**short-term – by 2030**). Incentives should phase out by 2035 as infrastructure scales (**medium-term – by 2035**).
- **Mandating charging in buildings**: Require minimum EV charging in new or renovated buildings, public garages, and private garages by 2028, following EU Energy Performance of Buildings Directive (**short-term**).
- **Trialling novel technologies and business models**: Cities like Tbilisi can pilot vehicle-to-grid (V2G) systems, real-time pricing and other innovations that leverage and promote sector coupling and demand-side flexibility, for potential nationwide adoption[56] (**long-term – 2040s and beyond**).
- **Repurposing petrol stations**: As fleets electrify, conventional petrol and diesel stations can be decommissioned and repurposed (**long-term – 2040s and beyond**).

As summarised above, **short-term actions** across each of the three areas include:

In-use vehicle monitoring and enforcement:

- **Establish low- and zero-emission vehicle zones (LZEZs)**, as proposed in various urban transport plans, in a way that is consistent with cities' latest planning and strategy.
- **Increase enforcement and fines for road traffic violations**, including emissions violations, following the guidelines on safety, speed limits and other operations as outlined in the Tbilisi Transport Plan.

[55] As with national target setting on EV deployment, city-level targets can sometimes lag real-world developments. For instance, the draft 2023 NECP aimed to have 15 publicly available charging stations installed in Tbilisi by 2025; there are already more than 100.

[56] States and municipalities are ideal testbeds for new technologies and policies. Tests of V2G technologies and real-time electricity pricing have been spearheaded by cities like Shanghai, China, and the US state of Washington, to test their viability at the local level.

- **Monitor emissions of the in-use vehicle fleet**: Monitoring systems should be deployed to track real-world vehicle emissions, including tailpipe exhaust as well as brake and tyre particle wear and road dust.

Promote vehicle electrification:

- **Develop EV fleet targets for public and government fleets,** prioritising public transit buses, but also covering urban delivery and taxis, as well as government and municipal fleets. Targets can be based on sales or in-use fleet shares and represent the first step toward regulatory requirements.
- **Explore joint procurement and tenders for electric public transit buses** to pool demand, standardise procurement and secure better pricing and efficiency.
- **Implement "soft" incentives for EVs,** such as reduced or waived parking fees.

Facilitate charging infrastructure deployment:

- **Remove administrative barriers and develop a phased plan for urban EV charging**: These tasks can be coordinated by the cross-sector EV taskforce, with a focus on identifying barriers and planning for phased rollouts.
- **Incentivise charging station deployment** through targeted VAT and import duty reductions or exemptions for EV charging equipment, or by providing favourable financing.
- **Require buildings to include charging points**, for example by adopting the preparatory measures for off-street charging outlined in the EU Energy Performance of Buildings Directive for new and renovated structures.

Medium-term actions include:

In-use vehicle monitoring and enforcement:

- **Implement roadworthiness and fleet renewal rules** requiring the scrapping of highly polluting or inefficient vehicles, with optional incentives for replacing them with new electric vehicles.

Promote vehicle electrification:

- **Set mandatory EV fleet targets for buses and for public and commercial fleets**, building on short-term targets (to 2030) and extending to urban delivery, ride-hailing companies and taxis.
- **Phase out "soft" incentives for EVs** by gradually realigning parking fees to match those for conventional ICE vehicles.

Facilitate charging infrastructure deployment:

- **Promote coordination** among distribution system operators, charge point operators and mobility service providers as well as aggregators and public transport authorities, to capitalise on opportunities created by vehicle-electricity system integration.
- **Trial technologies and business models** such as time-of-use (TOU) tariffs, smart meters and vehicle-to-grid (V2G) for potential nationwide use.
- **Require petrol stations to offer EV charging** through regulatory mandates, ensuring competition and a diversity of consumer options.
- Gradually reintroduce value-added tax (VAT) and import duties on EV charging equipment.

Long-term actions (2040s and beyond) include:

In-use vehicle monitoring and enforcement:

- **Mandate the retirement of conventional ICE vehicles** starting in designated zones or districts and targeting specific vehicle categories (e.g. commercial fleets, cars, buses and, eventually, trucks) before nationwide phase-out targets take effect.

Facilitate charging infrastructure deployment:

- **Designate EV-only parking/charging areas** and decommission and repurpose legacy petrol stations.
- **Pilot vehicle-to-grid (V2G) schemes** and other ways for EVs to sell stored energy back to the grid.

A city-level strategy for multimodal and sustainable transport

Mobility and accessibility policies, aimed at promoting alternatives to driving and ensuring safe, equitable and affordable transport, depend on density, urban form and existing infrastructure, making them more context-specific than national measures. Still, a set of common approaches, tailored to specific city typologies, can guide municipalities, alongside resources on best practices in public transit and urban and transport planning.

In Georgia, journeys between multiple regions or municipalities are classified as intercity transport and fall under the administration of the national Land Transport Agency. The only agglomeration-level link exists between Tbilisi and Rustavi, where a legal exemption permits coordinated routes between the two cities.

Delegating responsibility for interregional transport to national authorities hinders direct coordination among municipalities on routes, timetables and fares. The absence of a direct communication platform forces local governments to rely on

international donors and partners to facilitate cooperation. Stronger partnerships between municipalities could help integrate regional transport networks and promote knowledge-sharing on urban mobility planning.

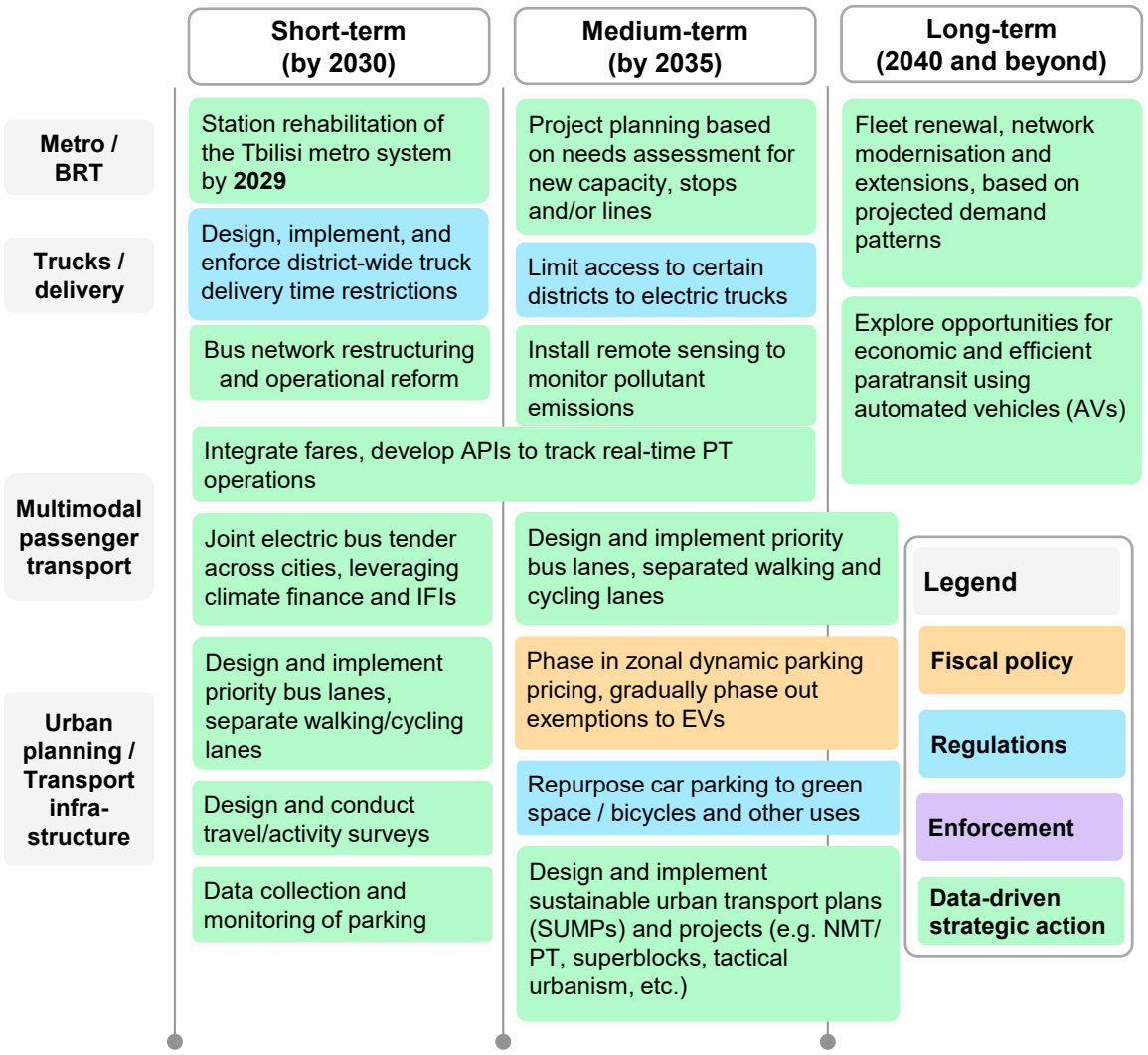
As summarised in the previous chapter, large cities like Tbilisi, Batumi and Kutaisi have prepared sustainable urban mobility plans (SUMPs). But for smaller towns, SUMPs are likely to be too resource-intensive. Pooling resources with neighbouring municipalities to design shared services and infrastructure may be a more cost-effective alternative.

This roadmap highlights four pillars of a multimodal city strategy:

- **Develop metro and Bus Rapid Transit (BRT)**: While metro services only apply to Tbilisi, BRT could serve all of Georgia's major cities.
- **Regulate urban truck and delivery operations:** Limit access for polluting vehicles by time of day or through access charges, while shifting to electric trucks and e-cargo bikes for deliveries and municipal services.
- **Prioritise multimodal passenger transport** by expanding urban bus services, supporting minibuses in suburban areas and promoting walking, cycling and micromobility.
- **Target urban planning and transport infrastructure** in Tbilisi, Batumi, Kutaisi and Rustavi, directing funding to the highest-value initiatives identified in existing mobility plans.

Recommended actions for each pillar are detailed below and summarised in the roadmap timeline (short, medium and long term).

A city-level multimodal strategy: timeline for implementation and milestones



High-capacity public transit networks

Infrastructure with Bus Rapid Transit (BRT) features – including dedicated priority bus lanes – is being installed on major Tbilisi avenues. Combined with metro station modernisation and improved traffic light timing, these lanes could enable fast, reliable, high-frequency service and a strongly competitive alternative to cars, particularly during peak congestion.

These projects are cited in MT-7B and MT-7C of Georgia's 2024 NECP. More broadly, the National Energy and Climate Plan (NECP) highlights Tbilisi's Green Transport Policy (EE-18) and Batumi's Sustainable Urban Mobility Plan (EE-19).[57]

BRT projects already designed in Batumi and Rustavi should be completed by 2030 (**short-term**). Other cities should assess key passenger corridors for BRT suitability, aiming to replicate successes, avoid past mistakes, and work toward gold-standard systems by 2035 (**medium-term**). Adequate budgets should ensure efficient, low-emissions and rapidly electrified buses, while regular reviews of extension and modification needs guide network development into the 2040s (**long-term**).

Restricting road access to favour low-emissions delivery and municipal vehicles

Shifting deliveries to off-peak or night hours can reduce local emissions, ease peak traffic and improve fuel efficiency for trucks and, to a lesser extent, for cars by reducing truck operations during peak congestion periods.

City policy makers should weigh the benefits and challenges of such restrictions, including tying road access to vehicle footprint, axle weight or emissions standards (**short-term – to 2030**).

From the 2030s onward, delivery vehicle restrictions can be expanded so that in designated districts and at certain times of day, only low-emissions or electric trucks are permitted (**medium-term – to 2035**).

Fleet renewal, operational reforms, and redesign of public bus networks

Renewing public bus fleets and reorganising operations – including ownership, driver salaries, routes and network coordination – are top priorities in both city mobility plans and national transport policy. Georgia's 2024 National Energy and Climate Plan (NECP) highlights these as near-term actions to 2030 for Tbilisi, Batumi, Rustavi and Gori, with national ministries coordinating municipalities and private operators. Specific measures cited in the NECP are:

- EE-17: Improving public transportation and shifting to sustainable transportation modes
- MT-5A: Optimising and automating public transport routes
- MT-5B: Establishing and enforcing off-street parking; creating walking/cycling routes

[57] Measures under EE-18 include expanded capacity and ridership of the metro and implementing a zonal parking system. Measures under EE-19 include improved efficiency of bus routes and reduced private car activity in central districts. Both measures target expanded bus capacity and ridership and expanded capacity for non-motorised transport. Both also note the positive impact to household incomes, as well as negative impacts on the public budget.

- MT-5C: Improving roads and traffic management systems
- MT-5D: Renewing the public bus fleet, and replacing minibuses with public buses where sufficient throughput exists
- MT-9B: Other public transport measures, including bus network optimisation, BRT corridors, taxi regulation and bus fleet renewal

Two aspects are overlooked in both the city-level and national planning documents:

- Bus travel will only become preferable to private cars if trips are reliably faster. In dense, congested cities, dedicated bus lanes and automated, priority traffic lights are key to meeting this standard and boosting passenger throughput.
- Given that the NECP does not address coordinated procurement, authorities should assess the potential for cost savings, lower administrative burdens and improved access to international finance through joint tenders (**short-term – to 2030**).

Transit fare integration, real-time operations tracking and network information

Georgian cities are at different stages of modernising public transit. Tbilisi, for example, has recently finalised fare integration. Digital platforms like the Generalised Transit Feed Specification make it easier to offer real-time route planning through apps such as Google Maps. Features like real-time arrival information, coordinated scheduling of infrequent services, and accurate travel-time predictions can make buses more attractive than cars. Adoption will vary by city and may extend into the 2030s, but these basic services should be prioritised to enable a shift to bus travel (**short- to medium-term – through the 2030s**).

Safe, dedicated walking and cycling infrastructure linked to public transit

Bicycle use is low in Georgia, despite substantial potential in major cities like Tbilisi, Kutaisi and Batumi. By tackling outdoor air pollution while developing safe and well-connected bike lanes, these cities can harness the benefits of cycling as a non-polluting mode that delivers numerous benefits to public health and quality of life.

Ensuring that walking and cycling lanes are well-maintained, unobstructed and not deprioritised relative to car traffic is crucial for making public transit stations accessible to cyclists and pedestrians. Investments in transit bus fleets and networks should be coordinated with the development and maintenance of walking and cycling infrastructure (including secure and convenient bicycle parking) near bus stations (**short-term – to 2030**). Regulations requiring pedestrian and cyclist rights of way be maintained during construction projects, even when paths are obstructed, can improve walking and cycling safety.

Recurring mobility surveys

Surveys help policy makers and planners understand not only mobility patterns but also priorities for improving transport systems. Recent Tbilisi surveys identified regions where high-capacity bus corridors could cut commute times and improve access to commercial centres, and showed that air pollution and congestion consistently rank highest among public concerns on transport, health and quality of life.

Travel or more detailed activity surveys should be conducted every five to 10 years to track progress in sustainable and affordable transport and trip-making patterns. Beyond measuring modal shifts and behaviour, surveys should monitor the experiences of drivers, pedestrians, cyclist and public transit users and seek their views on accessibility and affordability while also soliciting their observations on the benefits and downsides of transport. Major cities that have not conducted a transport or activity survey in the past decade should do so by 2030. Other cities should schedule regular polls and update their survey design based on best practices, starting with Tbilisi's latest example.

Tracking parking use in preparation for dynamic pricing

Tbilisi has begun developing a zonal parking system covering 9 400 spots – just over one-third of the total – but parking outside designated areas remains common, and metering and enforcement are limited. Setting parking fees is politically challenging, especially where alternatives to private car travel are scarce. Policy makers in Tbilisi and other cities should move beyond zonal systems toward dynamic pricing mechanisms, where rates adjust in real time based on sensor data and target around 85% occupancy. Predictive modelling can refine price levels. Dynamic pricing not only generates reliable revenue but also cuts fuel use by reducing "cruising for parking" and raising overall fees. Municipalities should publicly disclose and promote how parking revenue is spent (e.g. on road maintenance and public transport).

Tbilisi should trial dynamic parking within two to three years and fully implement it by 2035. Other cities should build infrastructure and enforcement capacity to adopt dynamic pricing in central districts in the 2030s (**medium-term – to 2035**). **This recommendation aligns with NECP measures MT-9A and MT-7D**, but favours dynamic over zonal pricing.

Incorporating public participation in the urban transport planning process

Tbilisi has begun integrating public participation into urban and transport planning. While allowing input can create delays and risks litigation or undue influence by wealthy or minority groups, participation should still be pursued, with safeguards to prevent project obstruction. Priority projects identified in the sustainable urban

mobility plans (SUMPs) of Georgia's largest cities should be funded and implemented as soon as possible, after seeking public input for those that have not yet done so (**short-term – to 2030**).

As summarised above, **short-term actions** across each of the three areas include:

Metro and Bus Rapid Transit (BRT):

- **Implementing projects already underway**, as described in the chapter summarising Georgia's city-level framework

Trucks and urban delivery:

- **Designing, implementing and enforcing district-wide truck delivery time restrictions**, either by limiting access for vehicles above a certain weight to off-peak hours, or by allowing entry only to trucks that meet minimum emissions standards

Multimodal passenger transport:

- **Integrating fares and developing APIs to track real-time public transit operations**, recognising that different cities are at different stages in the process of adopting digital technologies to their public transit operations
- **Coordinating a joint electric bus tender across cities**, making use of climate finance and international financial institutions to cut costs and attract concessional funding, as outlined in the previous section
- **Introducing priority bus lanes and designated walking and cycling paths**, which are often overlooked in national planning documents

Urban planning/transport infrastructure:

- **Designing and conducting travel surveys** to inform policy makers on citizens' travel patterns and preferences, and more generally on public attitudes regarding mobility, pollution, health and climate
- **Monitoring parking space usage**, including ambient air quality monitoring and road traffic operations, both of which are already available in Tbilisi

Medium-term actions

Metro and BRT:

- **Conducting needs assessment for new capacity, stops and lines**. In the early 2030s, a new assessment of fleet renewal, stations, and network extensions needs should be conducted to inform future investments to maintain and expand high-capacity transit

Trucks and urban delivery vehicles:

- **Restricting access to electric trucks or pedal-assisted electric delivery cycles** to certain districts, building on delivery time restrictions by allowing entry only to vehicles with low or zero tailpipe emissions

Multimodal passenger transport:

- **Installing remote sensing to monitor pollutant emissions**, enabling longitudinal studies on the impact of transport, industry and other policies – tracking both pollutant concentrations and human health outcomes
- **Introducing priority bus lanes and dedicated walking and cycling paths**, with a focus on providing safe, unobstructed access to bus stations and public transit hubs

Urban planning / transport infrastructure:

- **Introducing zonal dynamic parking pricing** and gradually phase out exemptions for EVs, based on the principal of ensuring that roughly 80% of on-street parking spots be occupied at any given time
- **Repurposing car parking into create green space, bicycle parking and other uses**, to gradually redesign urban areas around higher-throughput and active transport modes
- **Designing and implementing context-appropriate sustainable urban mobility plans** and projects that incorporate non-motorised transport, public transit, superblocks and tactical urbanism, drawing upon the experiences of Tbilisi and other Georgian cities

Long-term actions

Metro and BRT:

- **Renewing fleets, modernising and extending public transit networks**, guided by projected demand, to ensure that these high-capacity modes keep pace with travellers' changing needs

Multimodal passenger transport:

- **Exploring paratransit opportunities with automated vehicles (AVs)**. By the 2040s, electric AVs could provide low-cost, high-quality service in suburbs and exurbs, offering an affordable and attractive alternative to car ownership.

Abbreviations and acronyms

ADB	Asian Development Bank
AFD	Agence Française de Développement
AFIR	Alternative Fuels Infrastructure Regulation (European Union)
AIIB	Asian Infrastructure Investment Bank
BRT	Bus Rapid Transit
CAREC	Central Asia Regional Economic Cooperation
CPO	Charge Point Operator
CPMM	Corridor Performance Measurement and Monitoring
CSAP	Climate Strategy and Action Plan
DSM	Demand-Side Management
DSO	Distribution System Operator
EBRD	European Bank for Reconstruction and Development
EIB	European Investment Bank
ESCAP	Economic and Social Commission for Asia and the Pacific
EU	European Union
EVs	Electric Vehicles
GCF	Green Climate Fund
GEF	Global Environment Facility
GEL	Georgian Lari (in 2025, 1 GEL = ~0.37 USD)
GEOSTAT	National Statistics Office of Georgia
GFEI	Global Fuel Economy Initiative
GHG	Greenhouse gas
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
GNERC	Georgian National Energy and Water Supply Regulatory Commission
GOGC	Georgian Oil and Gas Corporation
GSE	Georgian State Electrosystem
HDV	Heavy-Duty Vehicle
ICCT	International Council on Clean Transportation
ICE	Internal Combustion Engine
IEA	International Energy Agency
IFI	International Finance Institution
IMF	International Monetary Fund
ITDP	Institute for Transportation Development and Policy
ITS	Intelligent Transport Services
KfW	Kreditanstalt für Wiederaufbau
LDV	Light-Duty Vehicle
LEPL	Legal Entity of Public Law (quasi-governmental organisation)
LULUCF	Land Use, Land-Use Change and Forestry
MaaS	Mobility-as-a-Service
MEPA	Ministry of Environmental Protection and Agriculture
MoESD	Ministry of Economy and Sustainable Development

MDB	Multilateral Development Bank
MSP	Mobility Service Provider
NDC	Nationally Determined Contribution
NECP	Integrated National Energy and Climate Plan (National Plan)
NEEAP	National Energy Efficiency Action Plan
NMT	Non-Motorised Transport (walking and cycling)
NREAP	National Renewable Energy Action Plan
OECD	Organisation for Economic Cooperation and Development
PT	Public Transit
SAOG	State Agency of Oil and Gas of Georgia
SLoCaT	Partnership on Sustainable, Low-Carbon Transport
SUMP	Sustainable Urban Mobility Plan
TOU	Time-of-Use (electricity pricing)
TSO	Transmission System Operator
TTC	Tbilisi Transport Company
UNECE	United Nations Economic Commission for Europe
UNFCCC	United Nations Framework Convention on Climate Change
USAID	United States Agency for International Development
USD	US Dollar
ZEV	Zero Emission Vehicle (i.e. no tailpipe CO_2 or pollutant emissions)

Glossary

bbl	barrel
bbl/d	barrels per day
bcm	billion cubic metres
bcm/yr	billion cubic metres per year
cm/s	centimetres per second
gCO_2	gram of carbon dioxide
gCO_2/kWh	grams of carbon dioxide per kilowatt hour
GJ	gigajoule
Gt/yr	gigatonnes per year
$GtCO_2$	gigatonne of carbon dioxide
$GtCO_2$/yr	gigatonnes of carbon dioxide per year

See the IEA glossary for a further explanation of many of the terms used in this report.

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