

Timor-Leste

Green Roads Profile

General

Road length (2022)
6,874 kilometers

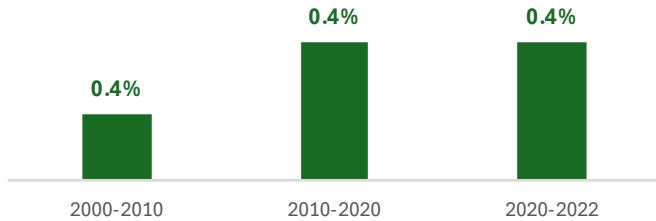
Subregion
(1) **South East Asia**

Income class
Low and lower middle income

Average annual growth rate of road length

Population (2024)
(1) **1.4 million**

Land area
15 thousand sqkm (2,3)



Urban population
33%

Rural population
67% (2)

Gross domestic product (GDP PPP, 2022)
6.25 billion USD

GDP per capita (PPP, 2022)
4,657 USD (2,3)
(3)

Timor-Leste's road network is comprised of 18.7% motorways, highways, and primary roads and 81.3% secondary roads, local roads, and other roads

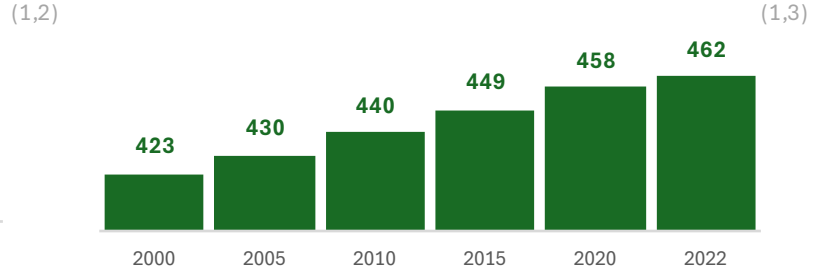
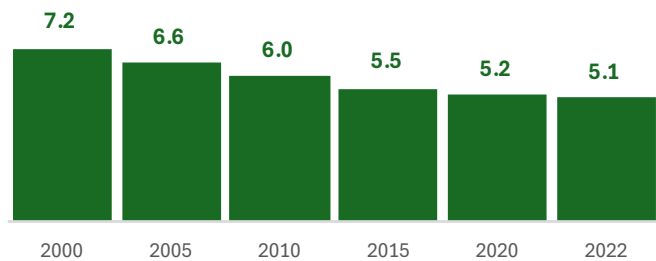
Further information on road length, pavement, and quality by road class is available in Appendix A

Road infrastructure availability (2022)
5.1 kilometers per thousand population

Road infrastructure density (2022)
(1,2) **462 meters per square kilometer** (1,3)

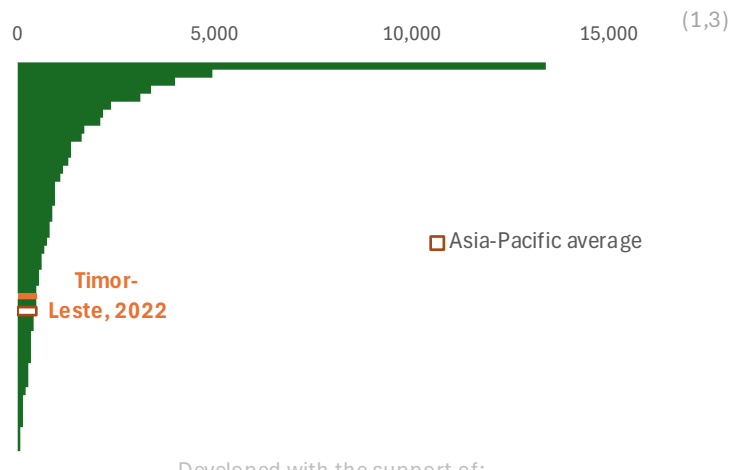
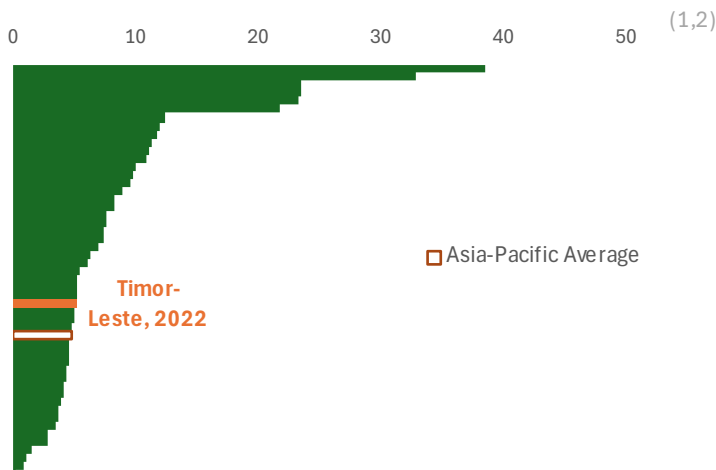
Road infrastructure availability trend, kilometers per thousand population

Road infrastructure density trend, meters per thousand population



Road infrastructure availability in Asia-Pacific, kilometers per thousand population

Road infrastructure density in Asia-Pacific, meters per square kilometer



Road vehicles (2023)
n.d.

(1) Public-private partnership investments in road sector, cumulative million USD

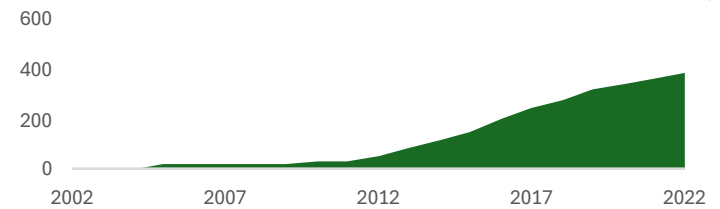
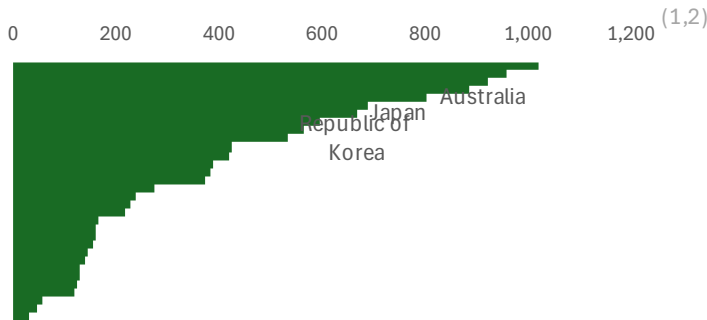
Share of vehicles by type

Share of road in total public-private partnership investments

Motorization rate (2023)
n.d.

(1,2) Official development assistance in road sector, cumulative million USD

Motorization rate in Asia-Pacific, vehicles per thousand population



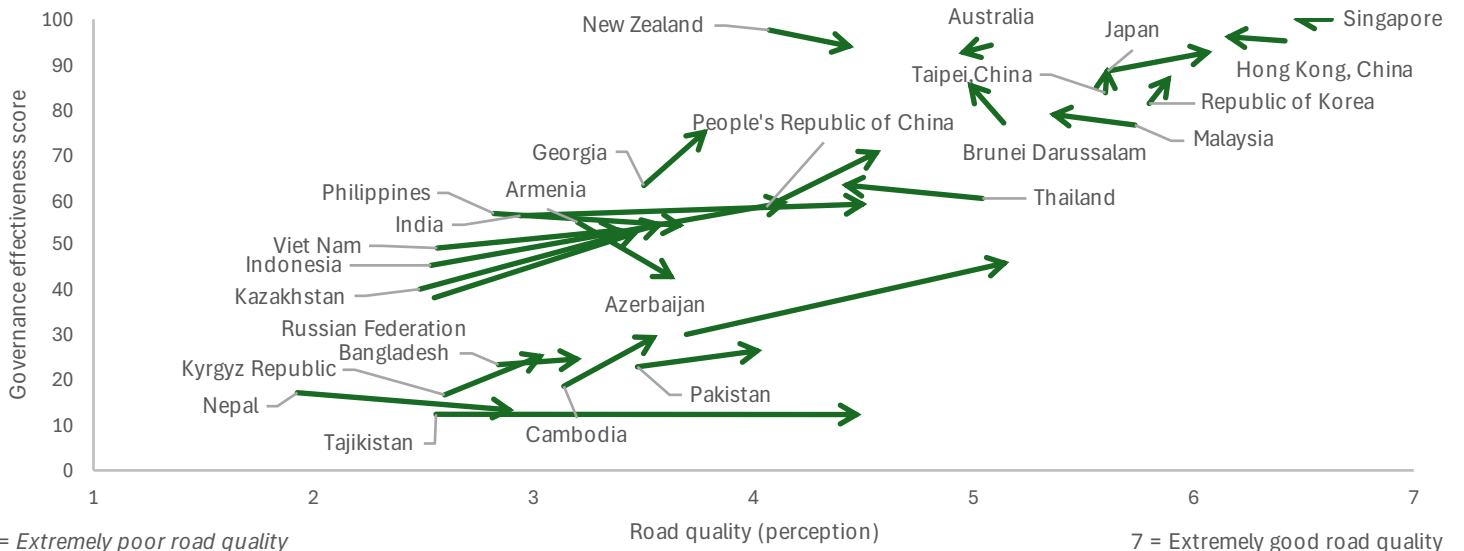
Share of road in total official development assistance



Road vehicles include 2- and 3-wheelers, LDVs, buses and other informal public transport, trucks, and other unclassified types

Road maintenance budget and deficit is available in Appendix B. Road user charging revenue information is available in Appendix C

Road quality (perception) vs. governance effectiveness score (2009-2019)



1 = Extremely poor road quality

7 = Extremely good road quality

Developed with the support of:



Quality of Life and Fostering Inclusive Growth

Rural access index (2023)
84%

(6)

Based on 2015 estimates, only 18% of the population could reach the nearest city in 30 minutes, another 9% could reach in 1 hour, and another 53% could reach only after 3 hours.

Rural population without access to all-season roads (2023)
0.16 million

(2,6)

Logistics performance index score (2023)

n.d.

(10)

National street network disconnectedness index

(7)

| Infrastructure score

n.d.

(10)

Logistics performance index ranking trend

Road crash fatalities (2019)
154 deaths

(8)

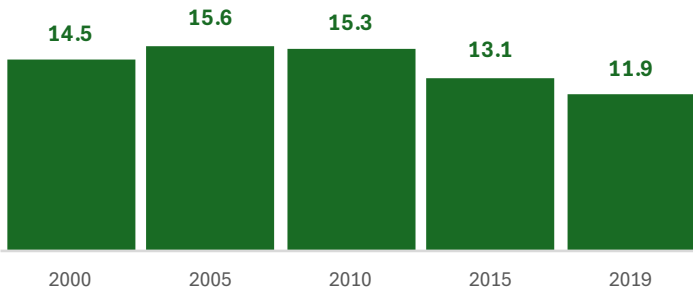
Road crash fatality rate per 100 thousand population

(2,8)

Percent of firms choosing transportation as their biggest obstacle - Manufacturing (2009)

9.2%

(11)



Asia-Pacific average is 15.7 fatalities per 100 thousand population

Percent of respondents answering high/very high - Level of Fees and Charges on Road transport

n.d.

(11)

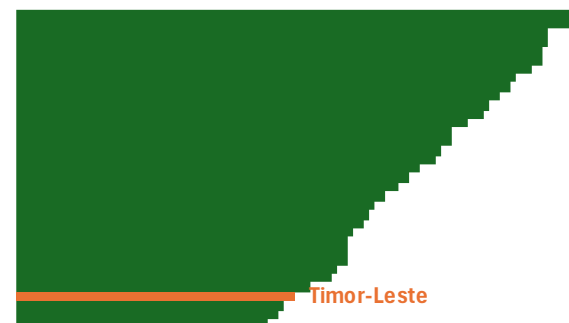
Level of fees and charges for less than full truck loads are considered

Mean speed in Asia-Pacific, kilometers per hour (2022)

0 20 40 60 80 100 120 (9)

Mean speed (2022)
53 kilometers per hour

(9)



Employment in transport sector (2022)

22.9 thousand employees

Share of transport sector in total employment (2022)

(12) **4.0%**

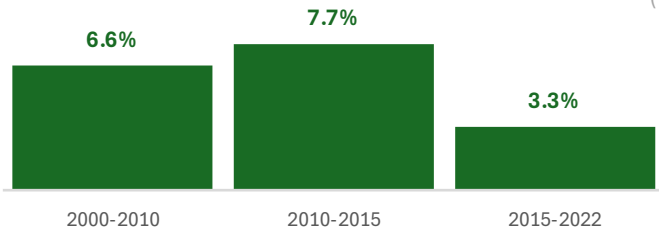
(12)

Average annual growth rate of transport sector employment

Share of females in total transport sector employment (2022)

(12) **8.1%**

(12)



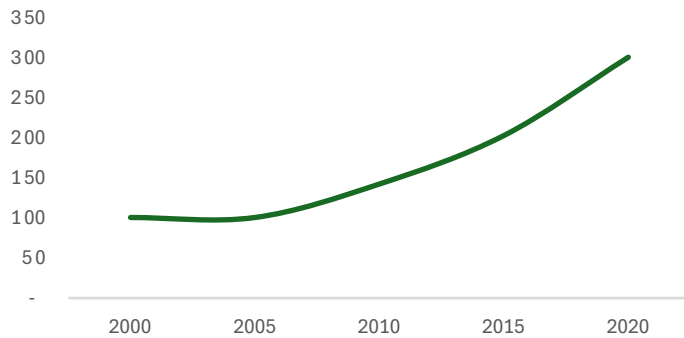
Decarbonization

Road transport energy consumption trend

Assuming 2000 value as base (100)

(13)

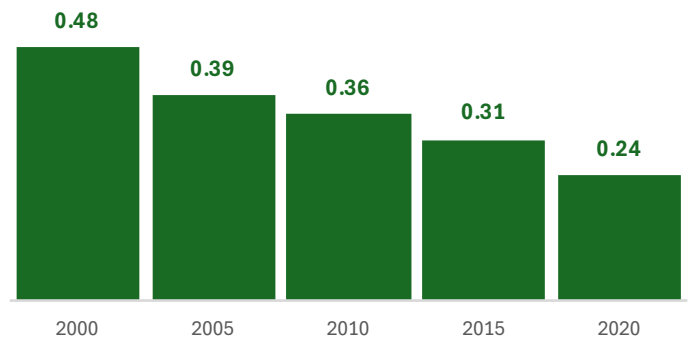
100% of Timor-Leste's transport energy consumption is in the road sector.



Between 2000-2010, Timor-Leste's road transport energy consumption grew 3.5% annually. Between 2010-2020, road transport energy consumption grew 7.8% annually.

Road transport energy intensity with GDP, TJ per USD (PPP)

(3,13)



Asia-Pacific average is 0.4 MJ per USD in 2020

Grid emission factor (2022)

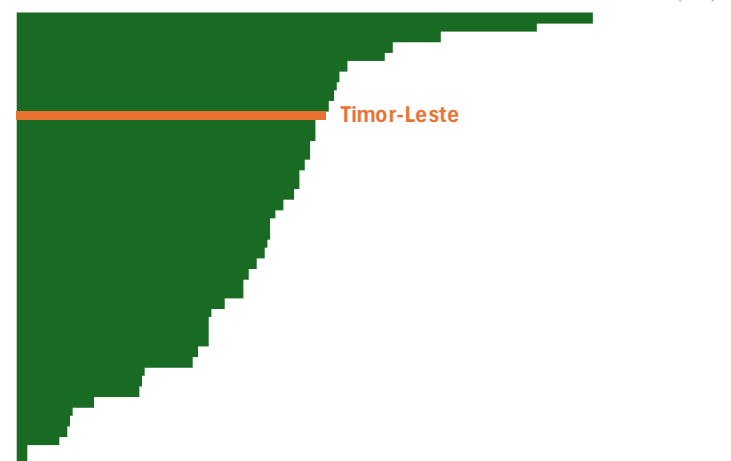
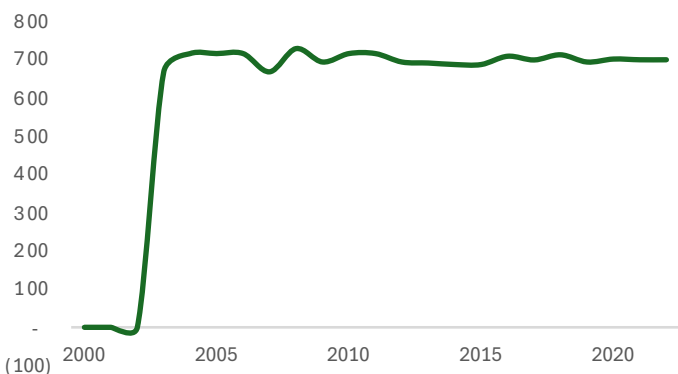
698.1 gCO₂ per kWh

Grid emission factors in Asia-Pacific, gCO₂ per kWh

(14)

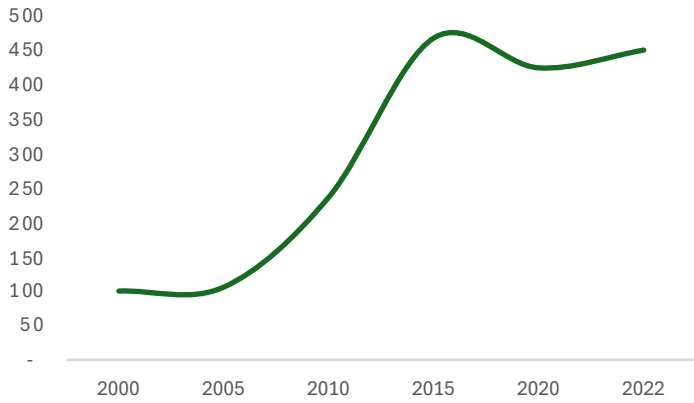
(14)

Grid emission factor trend, gCO₂ per kWh



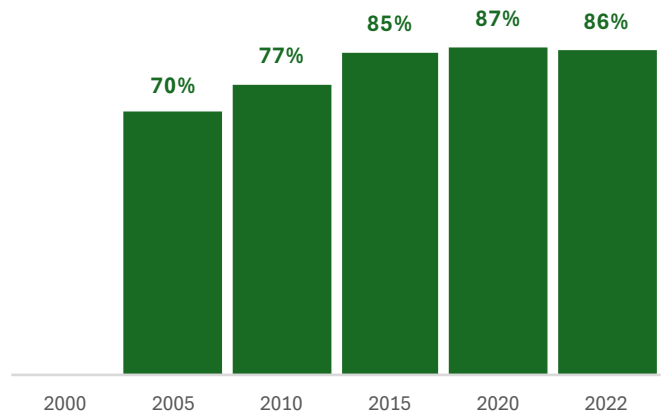
Road transport CO2 emissions trend

Assuming 2000 value as base (100)



(15)

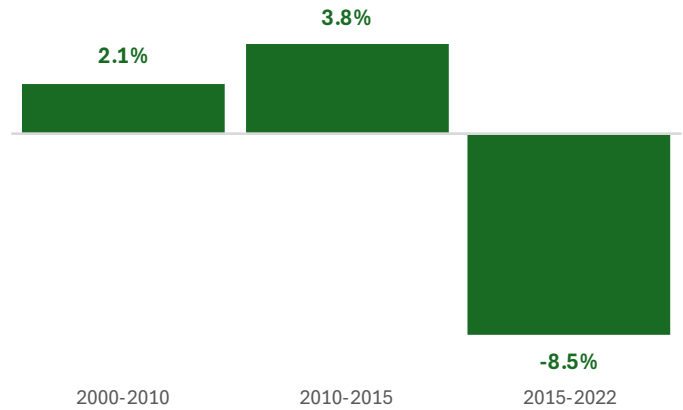
Share of road transport in total transport CO2 emissions



(15)

Between 2010-2019, Timor-Leste's road transport fossil CO2 emissions was growing 9.8% annually. After the COVID-19 pandemic, road transport CO2 emissions was growing 3.0% annually.

Road transport CO2 emissions intensity with GDP trend



(3,15)

Transport fossil fuel subsidies, cumulative from 2010 to 2022

None

0.0% of Asia-Pacific total

(16)

Implicit fossil fuel subsidies due to externalities

Climate Resilience and Disaster Preparedness

Expected annual damages to road and rail infrastructure due to hazards (2019)
0.99 million USD

(18)

National road vulnerability index ranking (2023)
n.d.

(20)

Share of road in total transport infrastructure in multihazard average annual loss to transport infrastructure (2023)
94.5%

(19)

Share of population in low elevated coastal zones (2018)
0.9%

(21)

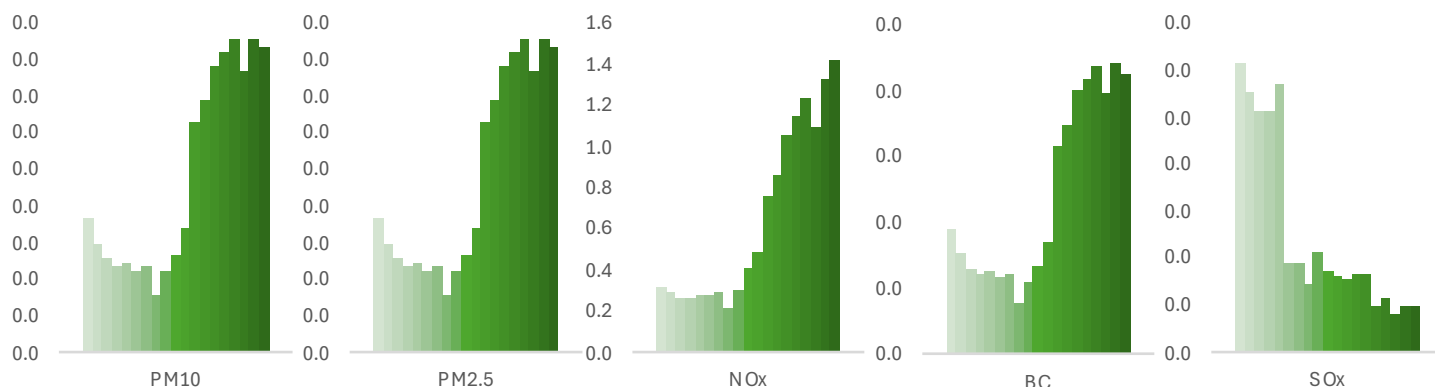
Pollution, Water and Land Management, Preserving Biodiversity, and Sustainable Materials

Paved roads (2023)
n.d.

(1)

Road transport air pollutant emissions, thousand tonnes (2000-2018)

(15)



In 2022, road transport contributed 24.2%, re-suspended dust contributed 18.0% in transport PM10 emissions. In total, road transport contributed about 16.1% in total PM10 emissions in Timor-Leste.

Deaths due to occupational exposure to diesel engine exhaust
 | 2000-2010 | 2011-2018
12 deaths | **16 deaths**

Terrestrial and marine protected areas (2022)
5.2%

(22) (% of total territorial area)

(3)

Share of biofuels in road transport energy consumption (2020)
n.d.

Terrestrial protected areas
16.0%

(13) (% of total land area)

Marine protected areas
1.4%

(% of territorial waters)

(3)

Domestic consumption per capita, tonnes (2024)
 | Timor-Leste | Asia-Pacific
4.6 tonnes | **13.8 tonnes**

Forest area (2021)
61.8%

(23) (% of land area)

(3)

Domestic consumption is the total amount of materials directly used in the economy (used domestic extraction plus imports), minus the materials that are exported.

Developed with the support of:



Policy Measures

Policy document	Year	Road-related measures
Second National Communication - TLS	2020	Active transport infrastructure expansion, Climate-resilient design standards, Transport infrastructure resilience
Transport Sector Master Plan	2018	Active transport infrastructure expansion, General infrastructure improvements, Vehicle inspection and maintenance, Development of transport asset management plan/policy, Performance-based transport maintenance contracts, General transport asset management, Investment required for specific projects, Investment volume for transport, Reference to finance mechanisms within country, Measures to improve rural-urban connectivity, Road infrastructure expansion, National road safety strategy
Global Status Report on Road Safety 2018	2018	Design standards for sidewalks and bicycle paths, National road safety strategy, National speed law, Audits/ star rating for existing roads for road safety
Timor-Leste Updated NDC 2022-2030	2022	Disaster notification/ early warning system, Development of transport adaptation/ emergency/ disaster plan/ policy, Development of transport plan/ policy, Disaster monitoring and risk assessment for transport infrastructure
The Highway Code	2003	Vehicle inspection and maintenance, National speed law, Passenger and freight load limits
Intended Nationally Determined Contributions	2016	Disaster notification/ early warning system, Climate-resilient design standards
National Adaptation Programme of Action	2010	Disaster notification/ early warning system, Climate-resilient design standards, Transport infrastructure resilience, Measures to improve rural-urban connectivity
Timor-Leste's National Adaptation Plan	2021	Disaster notification/ early warning system, Climate-resilient design standards, Transport asset management funding strategy, Transport infrastructure resilience, Road infrastructure expansion, Disaster monitoring and risk assessment for transport infrastructure
Timor-Leste Strategic Development Plan 2011-2030	2011	Prevention of construction of roads, Technical standards for road infrastructure, Development of transport asset management plan/policy, General transport asset management, Measures to improve rural-urban connectivity, Road infrastructure expansion
National Policy for Climate Change (Government Resolution 8/2022)	2022	Development of transport adaptation/ emergency/ disaster plan/ policy
Voluntary National Reviews 2023 - TLS	2023	General transport finance, Measures to improve rural-urban connectivity
Road Safety Opportunities and Challenges: Low- and Middle-Income Country Profiles	2020	Vehicle inspection and maintenance, Implementation of vertical deflections on roads

Policy Targets

Policy document	Target year	Road-related targets
Transport Sector Master Plan	2025	Upgrade to climate-resilient roads: Core Rural Roads in Coffee producing areas (D) Non-Core Rural Roads Low traffic (E1 Roads)
Transport Sector Master Plan	2030	Upgrade to climate-resilient roads: Other non coffee linked rural roads (D)
Transport Sector Master Plan	2022	Non-Core Rural Roads low Traffic (E2 Roads)
		Construct new bridges to provide all-weather access on major routes within five years and the remainder of national and district roads by 2030
Timor-Leste Strategic Development Plan 2011-2030	2030	Establish national ring road standards and establish a ring road to these standards by 2030. The National Ring Road will have been completed to provide a high standard highway right around the country capable of taking a full length container at an average speed of 60 km per hour
		New bridges will have been constructed to provide all-weather access on all national and district road routes
		Establish national ring road standards and establish a ring road to these standards by 2030.
Timor-Leste Strategic Development Plan 2011-2030	2030	The Dili to Baucau road link will be fully upgraded to international standards, including widening where technically feasible.
		The Manatuto-Natarbora road link will be fully upgraded to international standards, including widening where technically feasible.

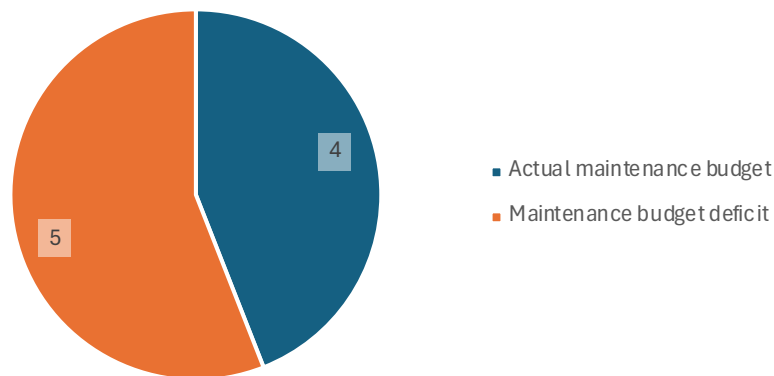
Appendix

A. Road length, pavement ratio, and quality by road class

Road class	Length	Paved	Quality			
			Good	Fair	Poor	Very Poor
Expressway	30		15%	14%	21%	51%
National	1,401					
Municipal	767					
Urban	605					
Rural (core)	1,975					
Rural (non-core)	1,630					
Rural (aldeias)	1,097					

Definitions and sources are available in "Asian Development Bank, 2024. The Future of Road User Charging in Developing Asia and the Pacific: Road Maintenance Financing and Cost Recovery Options"

B. Maintenance needs and budget, million USD



C. Road user charge revenues

Road user charge	Revenue (million USD)
Vehicle excise tax	6.3
Vehicle customs duties	6.2
Sales tax on vehicle imports	3.2
Vehicle registration charges	3.8
Fuel excise tax	8.2

Notes



(*) Policy measures and targets were extracted from policy documents as listed in the ATO National Transport Policies Database

<https://bit.ly/ATOpolicyrepository>

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- (23) Global Materials Flow Database (UNEP, 2023), <https://www.resourcepanel.org/global-material-flows-database>

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This profile was developed by Asian Transport Outlook in support of TA-6756 Improving Infrastructure Sustainability Through Better Asset Management – Developing a Green Roads Toolkit and Guidance for ADB Projects. The ATO is an initiative developed under TA-6763 REG: Accelerating Innovation in Transport - Asian Transport Outlook: Phase 3 (55119-001) of the Asian Development Bank (ADB) and is also being supported by the Asian Infrastructure Investment Bank (AIIB) through Purchase Order No. CW39446 AIIB Support: Asian Transport Outlook Phase 3.

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