Aichi 2030 Declaration on Environmentally Sustainable Transport (EST): Country Profile

Bhutan


Credits: unsplash

Developed by:

Asian Transport Observatory

Developed with the support of:

ADB ASIAN DEVELOPMENT BANK

AIIB ASIAN INFRASTRUCTURE INVESTMENT BANK

UNCRD

Bhutan

Suggested Citation: Asian Transport Outlook (ATO). (2024). Aichi 2030 Declaration on Environmentally Sustainable Transport (EST): Country Profile (Bhutan), https://asiantransportoutlook.com/analytical-outputs/countryprofiles/

For any questions or information related to this publication, please write to asiantransportoutlook@gmail.com.

Photographs used are copyright free.

Aichi 2030 Declaration on Environmentally Sustainable Transport (EST): Country Profile (Bhutan)

2024

The publication is available at: https://asiantransportoutlook.com/analyticaloutputs/countryprofiles/

Bhutan, a country in the South Asia region, having Low and lower middle income status, was recorded to have a national population of about 792 thousand in the year 2024.

The urban population share in total is about 45%. The age wise distribution of the national population accounts for 28% and 10% of <18 years old (minors) and >60 years old (seniors) population, respectively. The GDP per capita (PPP) for the year 2022 was 13,781 USD.

The motorisation rate of the road transport vehicles for the year 2022, for all vehicles combined, stood at 131 vehicles per thousand population. Similarly, the rate for 2&3 wheelers, LDV, freight vehicles and buses were 16, 115, 0, and 0 respectively.

Introduction to the profiles: The Asian Transport Outlook (ATO) project serves as a comprehensive data repository that organizes transport-relevant data and information from various official and secondary sources. These profiles are meticulously crafted using data from this extensive collection and draw upon a carefully curated selection of key indicators from a pool of over 500 transport-related metrics (visit https://asiantransportoutlook.com/snd for more information).

These profiles also provide comprehensive summaries of national targets that are relevant to the Aichi 2030 Declaration goals as contained in ATO's national policy trackers. The profile is structured by goals, followed by policy insights and enumeration of sample projects by the MDBs corresponding to the 6 Goals.

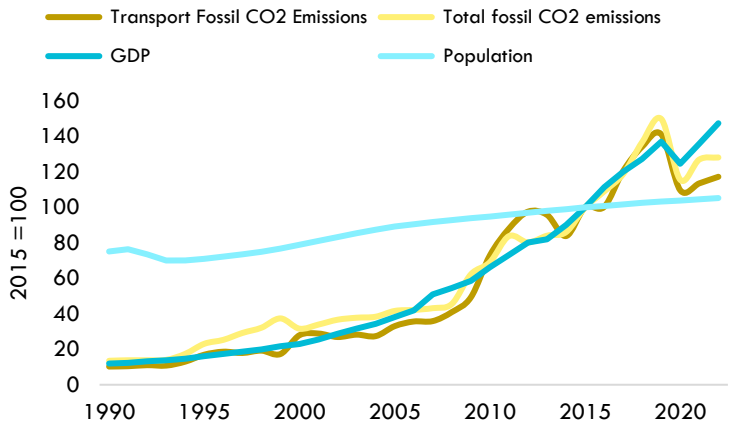
Contents:

Goal 1a – Low-Carbon (climate change mitigation):

By 2030, aim to peak transport CO2 emissions and initiate reductions in transport related CO2 emissions with the intention to move towards decarbonization of the transport sector by 2050, or shortly thereafter (Based on SDG 7.2, 9.1, 13.2, Paris Agreement)

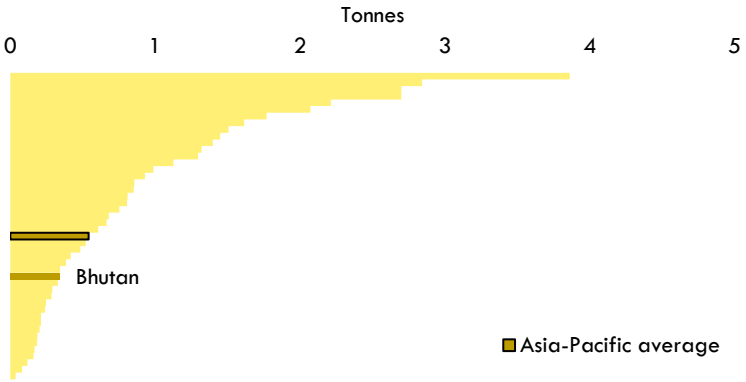
Transport CO2 emissions (fossil)

Growth of transport fossil CO2 emissions, total fossil CO2 emissions, population and GDP (PPP) (1990 - 2022)



(EDGAR, 2023)

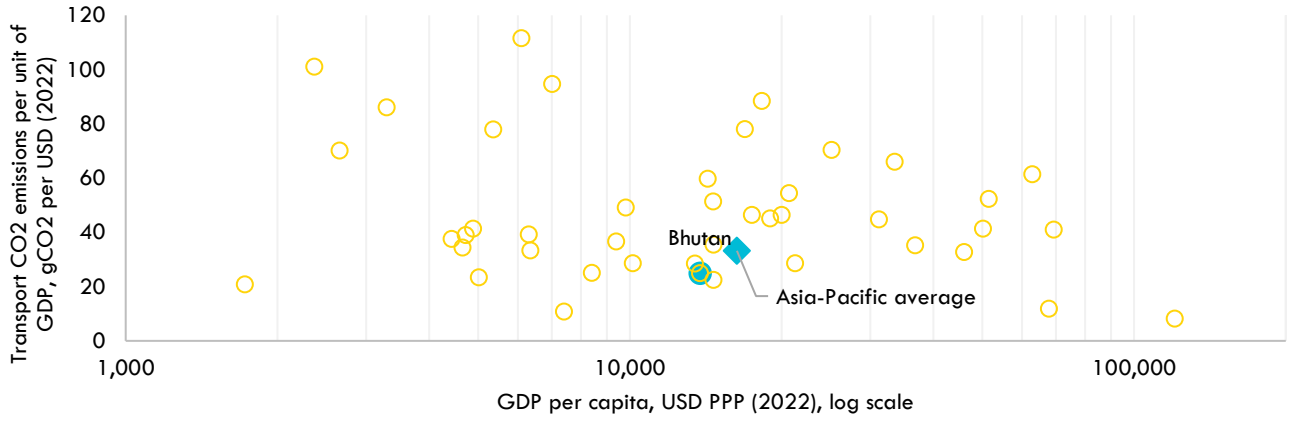
Transport fossil CO2 emissions per capita (2022)



(EDGAR, 2023)

- Emissions: Between 2015 and 2022, transport fossil CO2 emissions increased at an average annual rate of 4%, exceeding the Asia-Pacific average of 2%. Per capita emissions in 2022 were 0.3 tonnes, lower than the regional average of 0.5 tonnes.
- Energy: Transport energy consumption in 2021 was minimal, accounting for less than 1% of the Asia-Pacific total.
- Road transport: Road transport dominates emissions, contributing 86% of the total in 2022. The LDV share in road transport emissions was 74%.

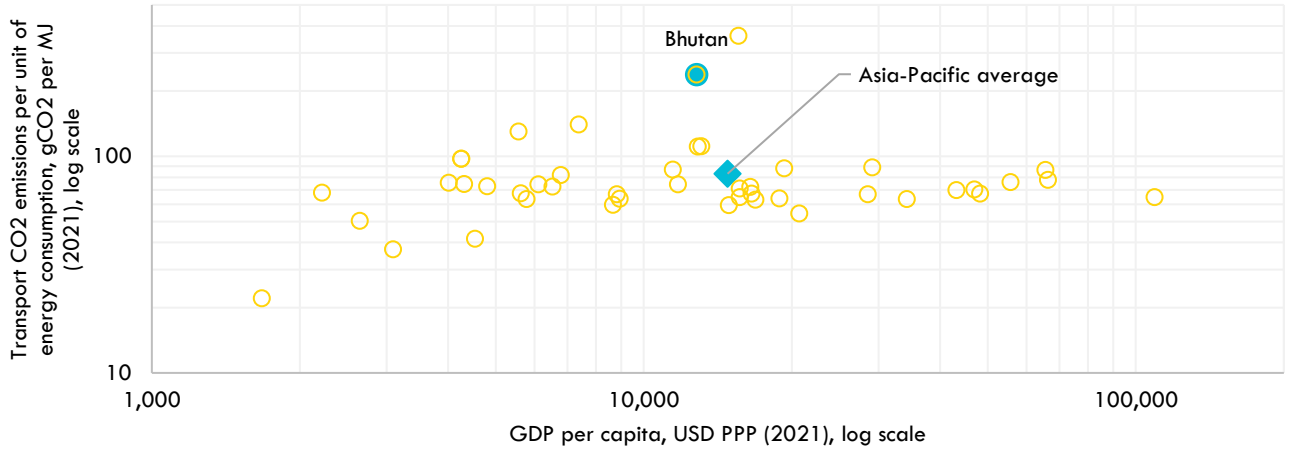
Transport CO2 emissions per unit of GDP (2022)



(EDGAR, 2023)

Transport energy consumption

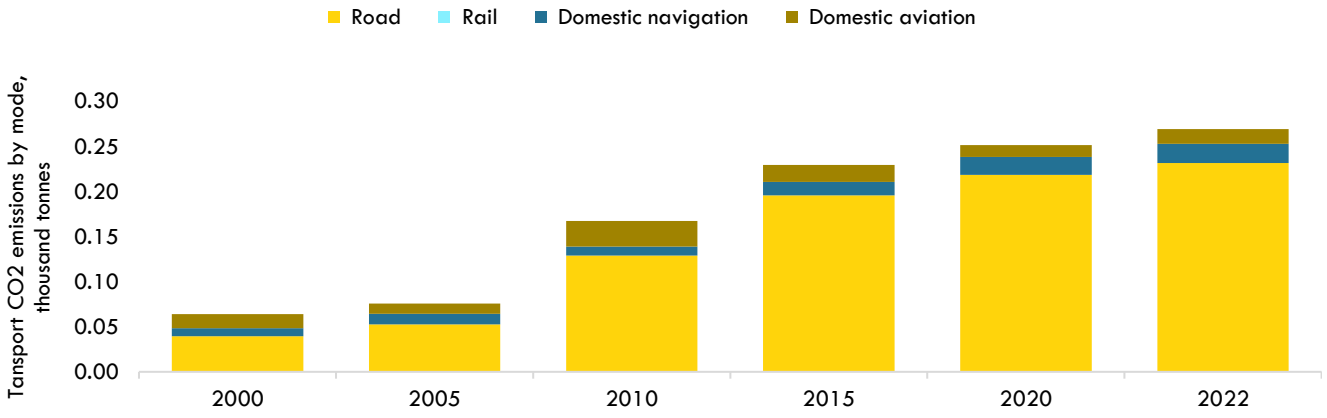
Transport CO2 emissions per unit of energy consumption and GDP per capita (2021)



(EDGAR, 2023)

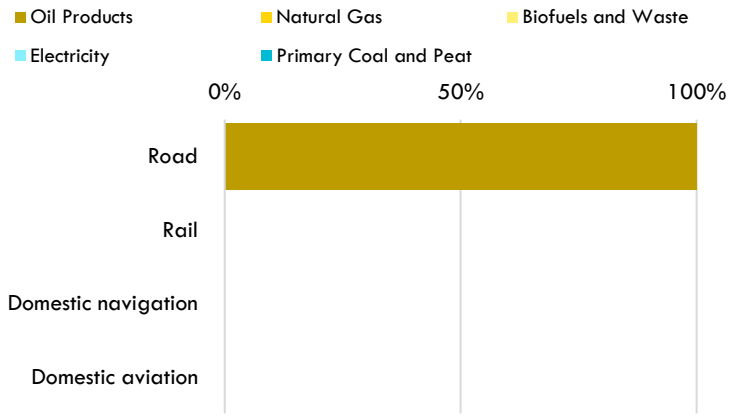
Transport CO2 emissions (fossil) and energy consumption modeshare

Growth of transport CO_2 emissions by mode



(EDGAR, 2023)

Share of transport energy consumption by mode and by source (2021)



(EDGAR, 2023)

Share of transport in renewable energy consumption:

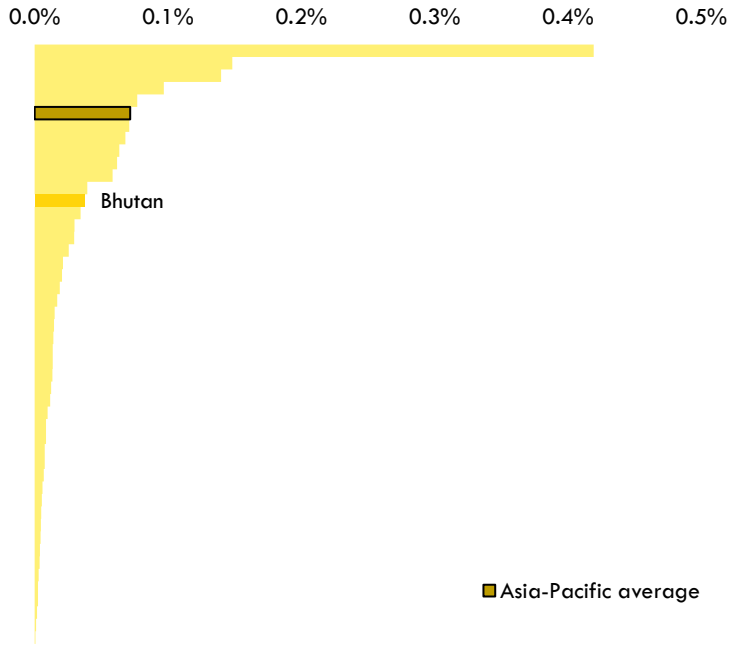
(Data not available)

Goal 1b – Resilience:

By 2030, increase resilience and adaptive capacity of transport system to climate-related hazards and pandemics such as COVID-19. (Based on SDG 13, Paris Agreement and the Sendai Framework for Disaster Risk Reduction 2015-2030)

Estimated average annual losses to transport infrastructure due to hazards

Average annual losses to transport infrastructure due to hazards, as a share of GDP, in Asia-Pacific (2023)



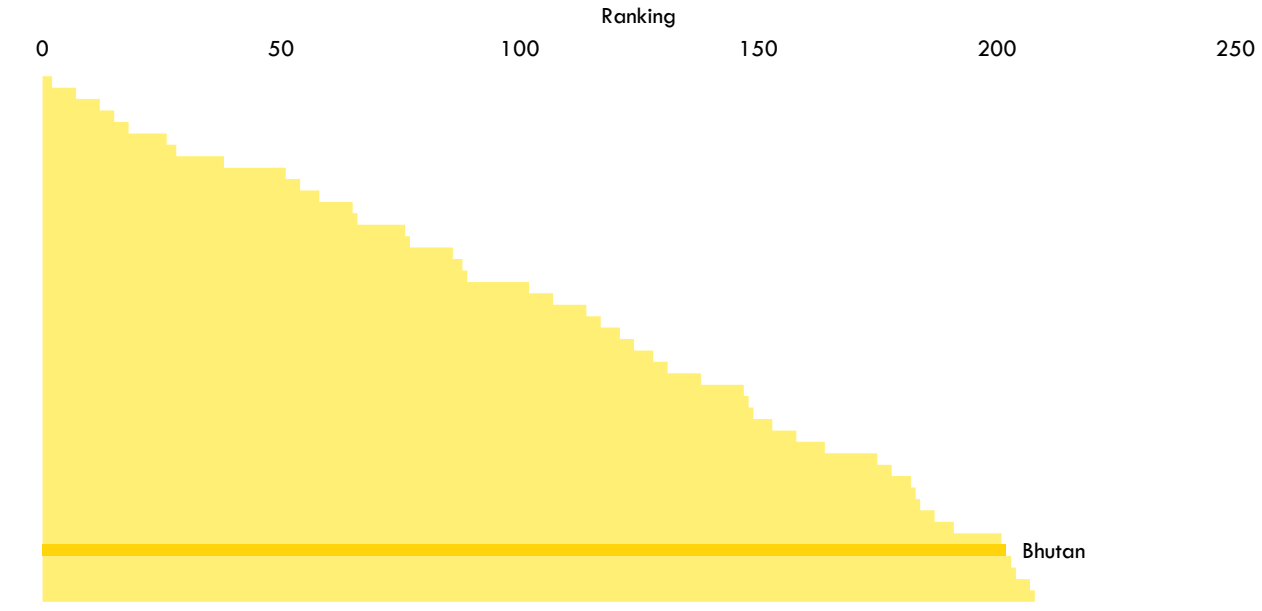
(CDRI, 2023)

• Vulnerability: Bhutan's road infrastructure is highly vulnerable to climate hazards, ranking 202nd out of 208 countries globally.

Note: National road vulnerability index ranking (NRVI), highest rank = 1 means fewer disruptions to trips after climate hazards due to sufficient network redundancy.

Climate change vulnerability

National road vulnerability index (NRVI) ranking (2023)



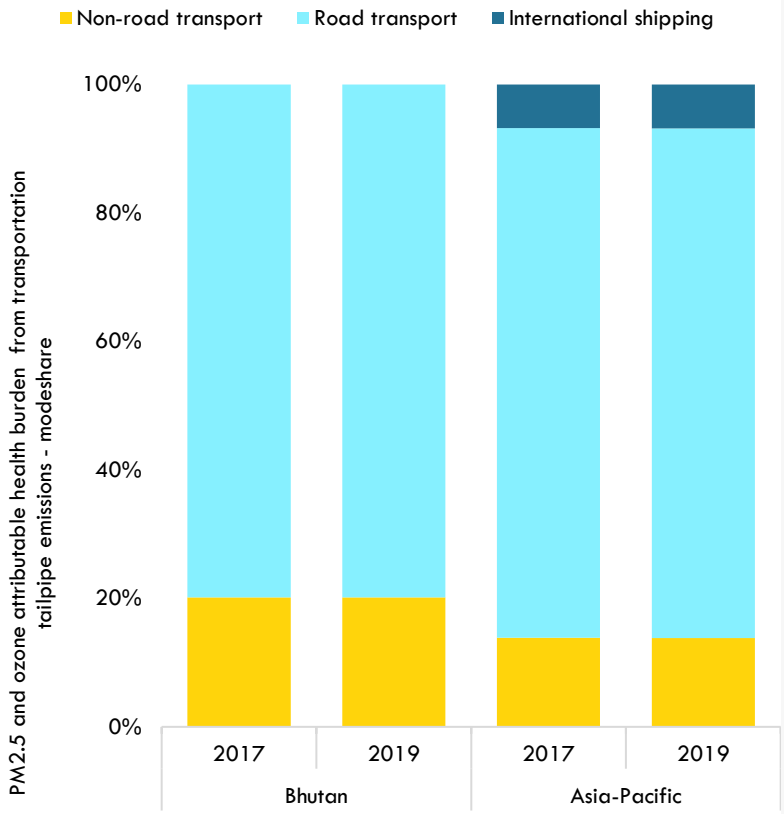
(Koks, et al., 2023)

Goal 1c – Air pollution:

By 2030, reduce air pollution and contamination caused by traffic, including PM2.5, other air pollutants and noise. (Based on SDG 3.9, 11.6).

Transport air pollution health impact

Transport air pollution health impact (PM 2.5)

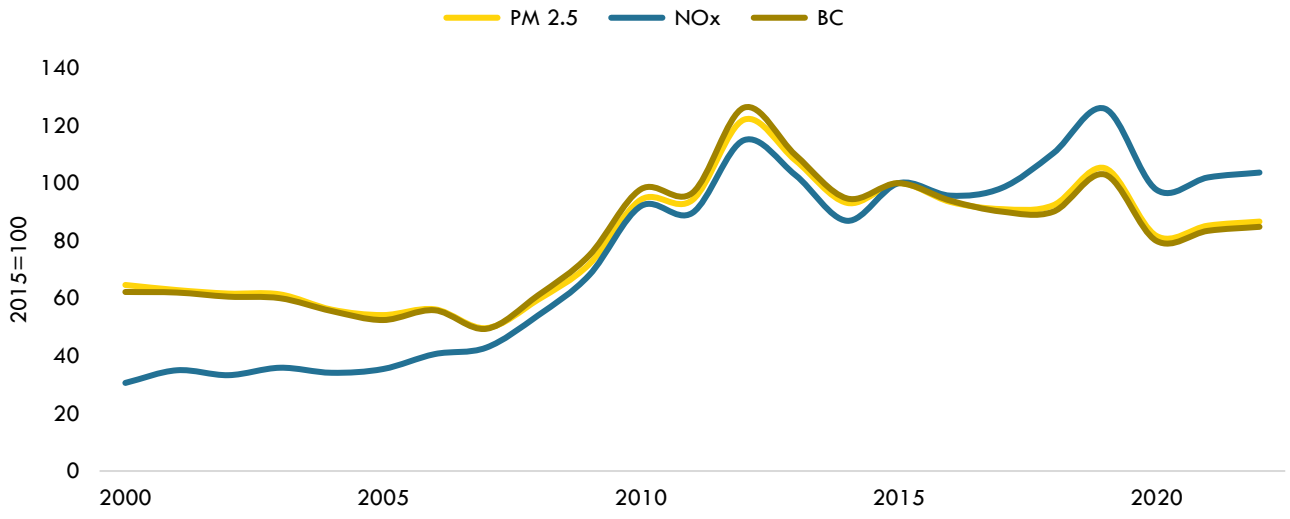


(McDuffie et al., 2021)

- Emissions: Between 2015 and 2022, PM2.5 emissions decreased, while NOx and SOx emissions increased slightly. The road transport sector contributes 22% of NOx emissions and 17% of BC emissions.
- Health impacts: Estimated deaths due to transport-related air pollution increased from 13 to 14 between 2017 and 2019.
- In Bhutan, the total attributable deaths due to the PM2.5 and ozone air pollution from the transport sector changed from 13 to 14 between 2017 to 2019.
- The numbers for Asia-Pacific were about 236 thousand and 253 thousand, respectively, for the same time period.

Transport air pollutant emissions

Growth of road transport air pollutant emissions



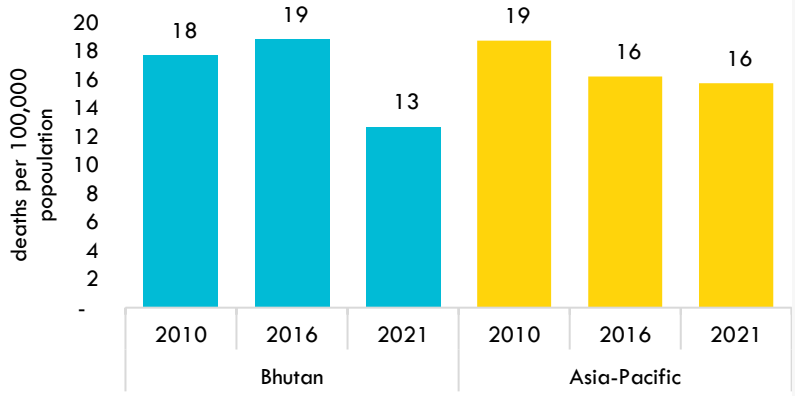
(EDGAR, 2023)

Goal 2 – Road safety:

By 2030, halve the number of deaths and injuries from road traffic accidents in Asia compared to 2020, with specific attention to vulnerable road users. (Based on SDG 3.6 and second UN Decade of Action on Road Safety 2021 – 2030, Stockholm Declaration on Road Safety)

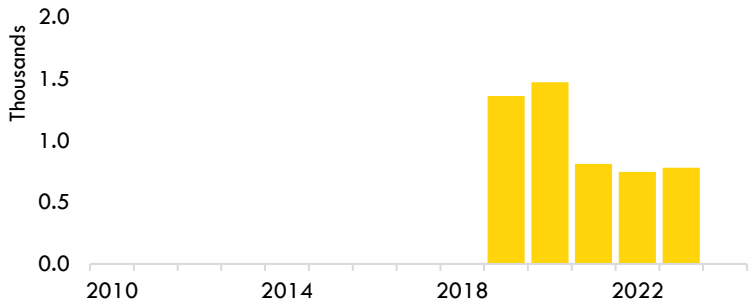
Road traffic crash fatalities

Road traffic crash fatality rate



(WHO, 2023)

Road traffic crash fatalities (absolute values)

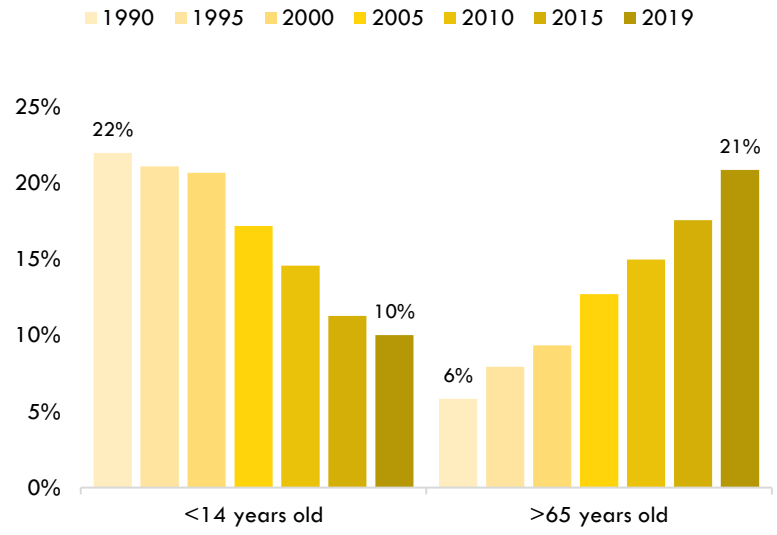


(Country official statistics)

- Fatalities: Estimated road traffic fatalities in 2021 were 95, with a fatality rate of 12.7 per 100,000 people. The economic cost of road crashes was 3% of GDP.
- Vulnerable groups: The share of minors and seniors in road fatalities increased between 2015 and 2019. Pedestrian and cyclist fatalities are low compared to the regional average.
- Infrastructure: Only 1% of roads are 3-star or better for pedestrians and cyclists.

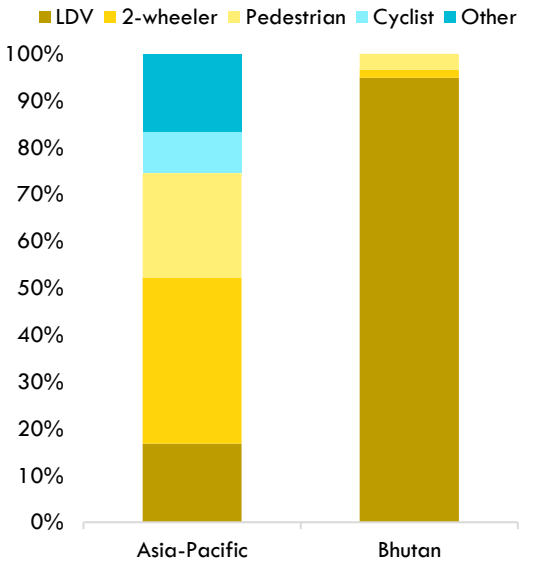
Share of vulnerable groups

Share of road crash fatalities by age



(GBD, 2021)

Share of road crash fatalities by mode



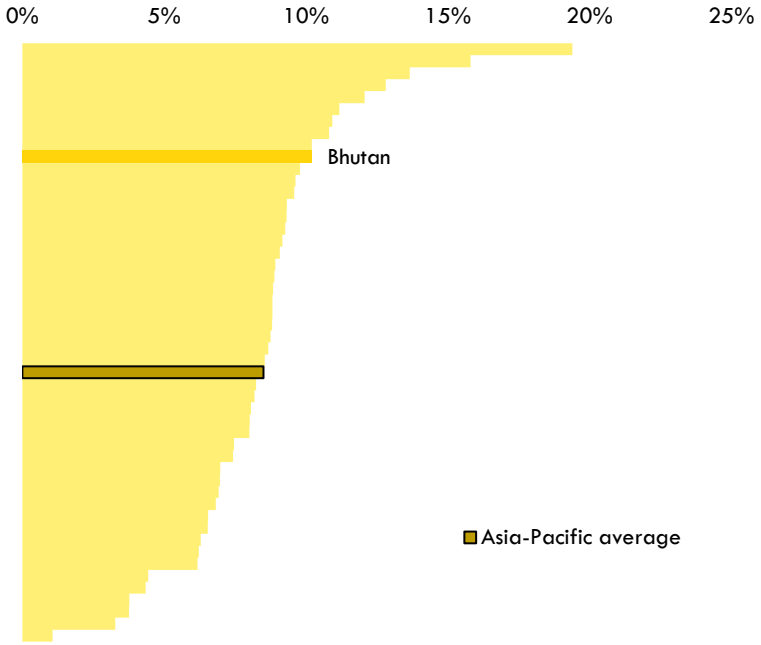
(WHO, 2023)

Goal 3 - Economic sustainability:

By 2030, realize sustainable economic and employment growth by leveraging science, technology and innovation and green investments in quality passenger and freight transport infrastructure and services in a manner that fully incorporates environmental and social impacts throughout the lifecycle of the transport infrastructure and services, (Based on SDG 8.4, SDG 9.1, 12.1 and 12.c)

Transport sector and GDP

Transport as a share of GDP

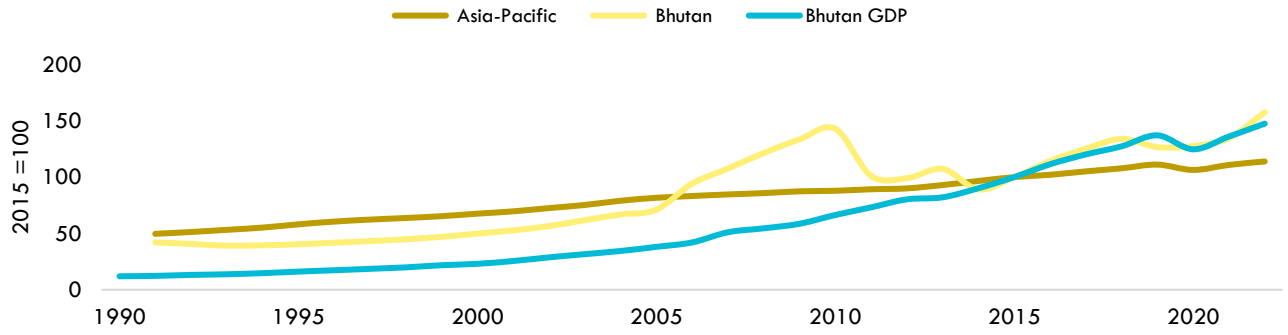


(UN, 2023)

- Economic contribution: The transport sector's share of GDP remained stable at 10% between 2015 and 2022.
- Employment: Transport sector employment grew at an average annual rate of 7%, reaching 4% of total employment in 2022. Female employment in the sector also increased.
- Logistics: Bhutan's logistics performance improved significantly, ranking 97th in 2023 compared to 149th in 2018.

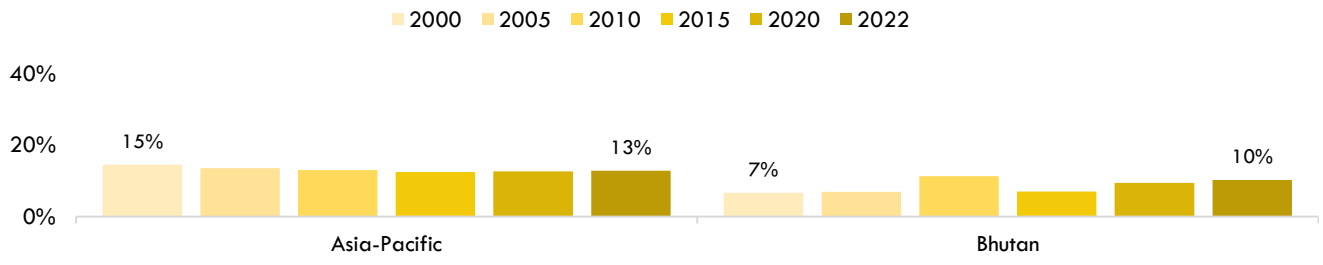
Transport employment

Growth of transport sector employment



(ILO, 2024)

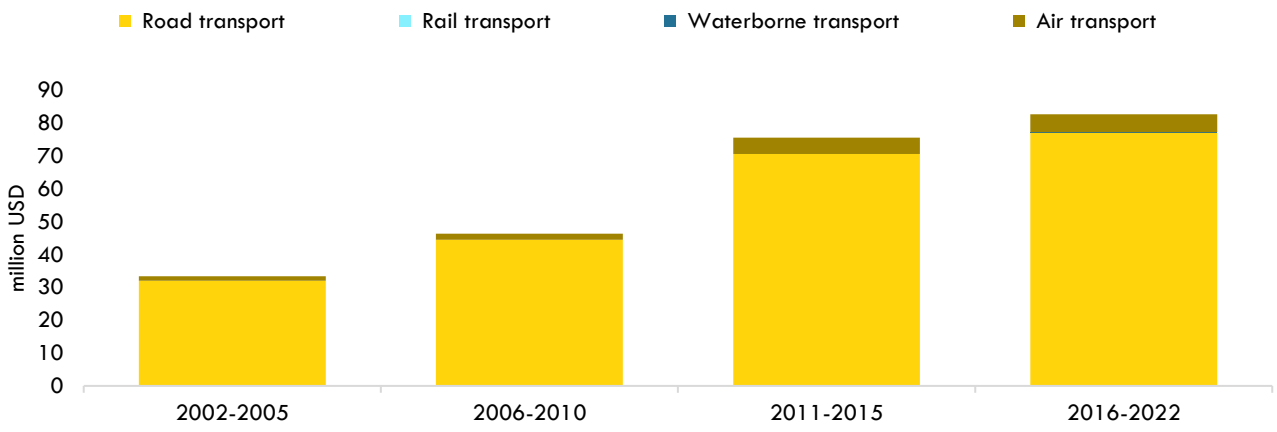
Female share in the transport employment



Estimated using (ILO, 2024)

Transport investments

Official development assistance for Transport



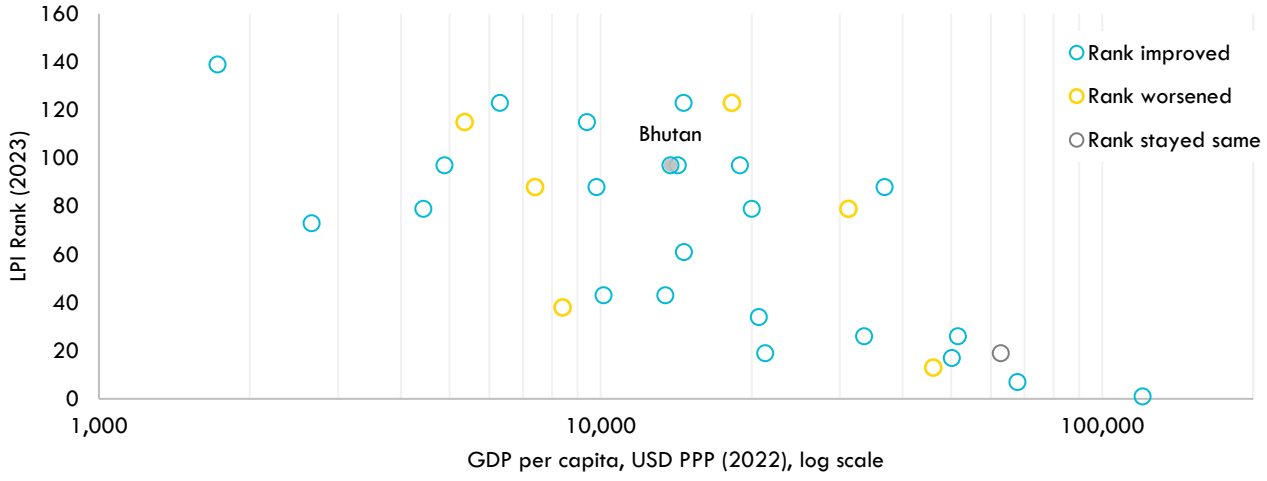
(OECD, 2022)

Public Private Partnership in Transport

(Data not available)

Freight sector

Domestic Logistics Performance Index, Rank change (2016 - 2023)



(WB, 2022)

Goal 4 - Rural access:

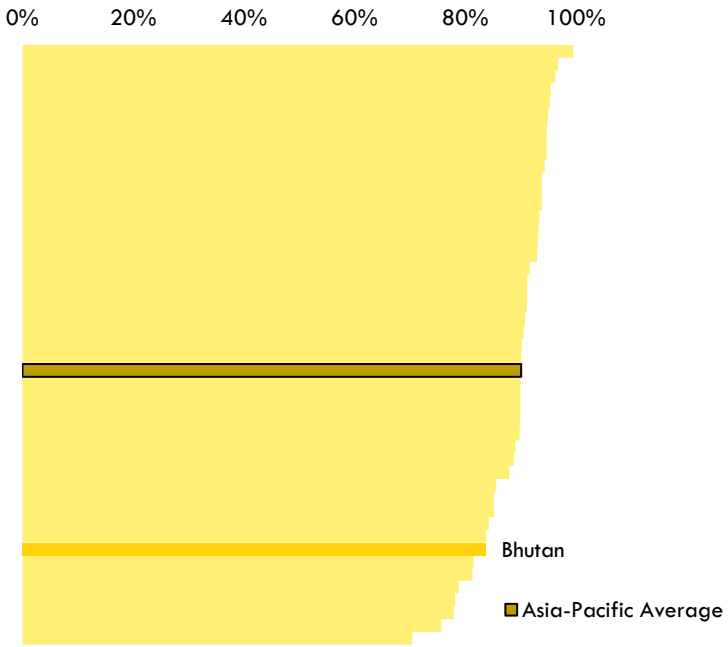
By 2030, realize accessible, inclusive, safe, affordable, and resilient rural transport infrastructure and services, thus facilitating improved access to markets, basic utilities and services including health and education by the farming community, and other rural population including physically disabled and vulnerable groups (Based on SDG 2 and SDG 9.1)

Rural access

Rural access index

(CIESIN-rural, 2023)

Share of Secondary and Tertiary roads in Total road network



(ATO and Country estimates)

• Accessibility: 63% of the rural population lived within 2km of an all-weather road in 2023, lower than the regional and global averages. An estimated 178,000 people lack decent rural access.

Goal 5 - Urban access:

By 2030, ensure access to accessible, inclusive, safe, efficient, affordable, and sustainable transport facilities, systems and services for urban dwellers, including physically disabled and vulnerable groups through the development of urban transport infrastructure and services (Based on SDG 11.2 and 11.7)

Urban rapid transit infrastructure

Rapid transit infrastructure to resident ratio (RTR)

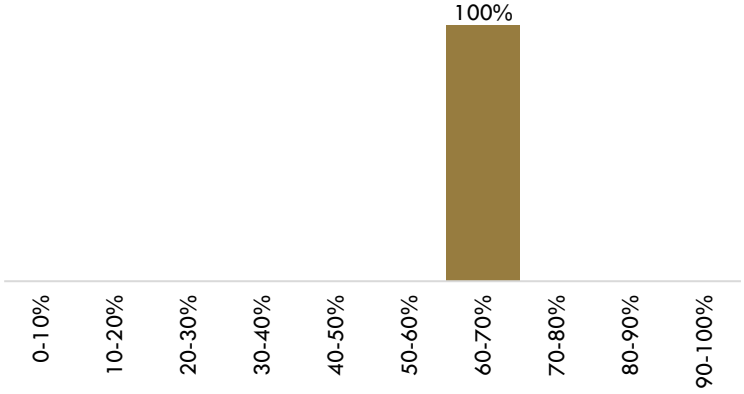
(Data not available)

Urban rapid transit infrastructure length

(Data not available)

Urban access

Share of cities by level of urban access (out of 1 cities)



(CIESIN-urban, 2023)

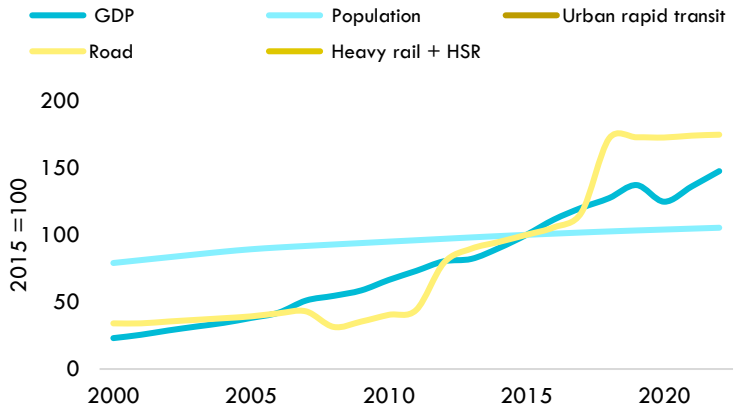
• Public transport: Data on urban access to public transport is limited, with only 1 out of a sample of 1 cities having urban access above 50%.

Goal 6 - National access and connectivity:

By 2030, facilitate inclusive multi-modal national (including rural-urban) and regional (cross-border) connectivity through the provision of sustainable multi-modal freight and passenger transport infrastructure and services (Based on SDG 9.1)

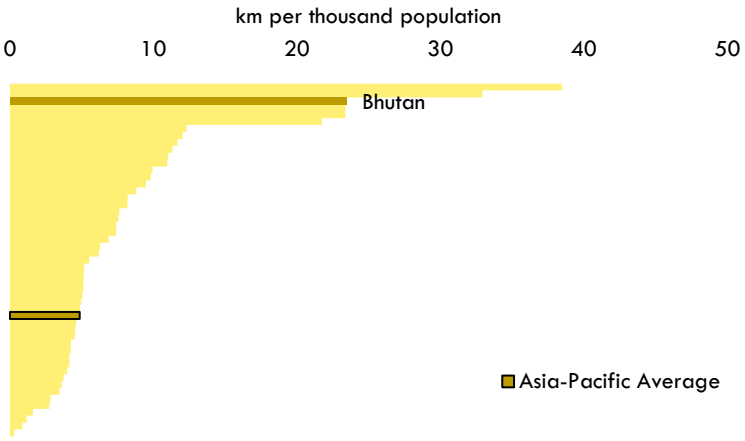
Transport infrastructure

Growth of transport infrastructure



(IRF, 2024) (UIC, 2024) (ITDP, 2022) (ATO and Country estimates)

Road transport infrastructure availability (2022)



(IRF, 2024) (ATO and Country estimates)

Rail transport infrastructure (including HSR) availability (2021)

(Data not available)

• Infrastructure: Road length increased significantly between 2015 and 2022. There is no heavy rail network. The bus motorization index remained low.

• Telecommunications: Mobile network coverage is extensive, and internet usage increased from 40% to 87% between 2015 and 2022.

Transport connectivity

Transport connectivity

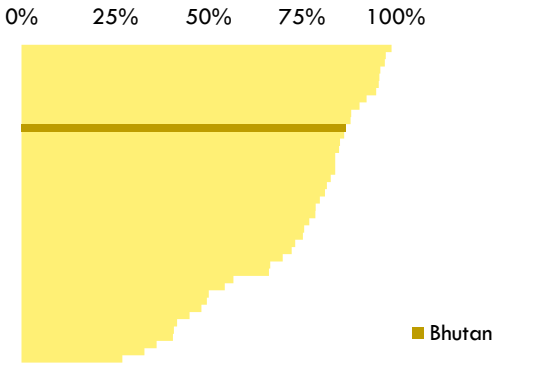
(Data not available)

Container port traffic (TEU)

(Data not available)

ICT

Percentage of individuals using the internet (2022)



(ITU, 2023)

Transport Policy insights:

The insights are based on the transport policy trackers developed by the ATO. Trackers include analysis of policy measures and targets from all the transport relevant policy documents for a country published after the adoption of the Aichi 2030 Declaration, i.e. 2021.

Coverage of Goals in Documents Published Since 2015

• Policy adoption: Bhutan adopted 14 transport-related policy documents since 2015, with 5 published since the Aichi 2030 Declaration.

• Policy focus: The majority of documents focus on low-carbon transport and air pollution, with limited coverage of other goals.

• Goal 1a - Low-carbon (climate change mitigation): Half of the documents focused extensively on this goal.

• Goal 1c - Air pollution: Over a third of the documents provided extensive coverage on air pollution.

• Goal 1b - Resilience & Goal 4 - Rural access: A small portion of documents (7% each) dealt extensively with resilience and rural access.

• Goal 6 - National access and connectivity: 14% of the documents had extensive coverage on this goal.

• Goal 2 - Road safety, Goal 3 - Economic sustainability, & Goal 5 - Urban access: No documents provided extensive coverage on these goals.

Transport relevant policy documents

Red - Poor coverage; Orange - Moderate coverage; Green - Extensive coverage

Doc. No.	Document Name	Year	Goal 1a	Goal 1b	Goal 1c	Goal 2	Goal 3	Goal 4	Goal 5	Goal 6
1	First Nationally Determined Contribution - BTN	2015								
2	Economic Development Policy (2016)	2016								
3	National Transport Policy 2017 - Policy Protocol Report	2017								
4	12th Five Year Plan 2018-23	2019								
5	National Energy Efficiency & Conservation Policy of Bhutan (Nov 2019)	2019								
6	National Environment Strategy (2020)	2020								
7	National Gender Equality Policy	2020								
8	The Climate Change Policy of the Kingdom of Bhutan 2020	2020								
9	Bhutan. National communication (NC). NC 3.	2021								
10	Low Emission Development Strategy (LEDS) - Surface Transport	2021								
11	Second Nationally Determined Contribution - BTN	2021								
12	Voluntary National Review 2021 - BTN	2021								
13	Energy transition pathways for the 2030 ESCAP agenda : SDG 7 roadmap for Bhutan	2022								
14	Technology Action Plan Report	n.d.								

(ATO National policy tracker)

Poor coverage
Moderate coverage
Extensive coverage

Transport relevant national targets

Doc. No.	Target	Year	Goal 1a	Goal 1b	Goal 1c	Goal 2	Goal 3	Goal 4	Goal 5	Goal 6
4	**12th Five Year Plan 2018-23**									
	Aviation: TAT per departing passenger = 30 mins. (40 mins - 2017) TAT for clearing one Arriving airbus passenger = 30 mins. (45 mins - 2017) Number of security incidents detected during dummy runs = 60 Compliance status to BCAA safety and security require ments=100% Status of Safety Management System Implementation = 100% (65% - 2017) Frequency of domestic flights = 2 to YDA, 4 to BDA and 2 to GDA (3 to BDA and 1 to GDA (2017)) Number of flight deviation due to weather decreased = 5 (10 - 2017) Lack of effective implemen tation for safety improved to ICAO minimum standard = 40% (50% - 2016) Lack of effective implemen tation for security improved = 45% (63.78% - 2009)	2023								x
	Frequency of urban transport services during rush hours increased = 10 mins (15 mins - 2017) Low/zero carbon emission vehicle penetration/ uptake increased = 0.04% (0.01% - 2017) Towns with urban transport system introduced = 4 (3 - 2017) Gewogs connected by public transport services = 153 (2017 - 148) Increase in public transport ridership = 10% (1.07% - 2017)	2023	x		x	x			x	
10	**Low Emission Development Strategy (LEDS) - Surface Transport**									
	• >75% of urban road should be covered with dedicated NMT tracks Construct min. 10 km of footpath every year	2050	x		x	x			x	
	Launch PBS system in Thimphu city	2025	x		x	x			x	
	1 public charging point for 6 Evs	2050	x		x				x	
	• 6 trains on 182 km route connecting all urban towns	2050	x		x				x	x
	• 18,515 public bicycles by 2050 • 1,850 docking stations by 2050	2050	x		x	x			x	
	100% taxi imports to be EVs by 2035	2035	x		x					x
	100% light vehicles and buses imports to be EVs by 2045	2045	x		x					x
	25% heavy vehicles (freight) imports to be EVs by 2050	2050	x		x					x
	• Establish minimum 1 neighbourhood node with basic amenities and facilities close to growing cities - Thimphu, Paro, Phuentsholing, and Samtse	2050	x		x	x			x	
	• Develop and implement parking 'de-growth' plan in consonance with target of no more than 5,500 new vehicles per year, post 2030, permitted to register • Achieve 50% of parking 'de-growth' in preparation for gradual phasing out ICE passenger vehicles • 100% parking slots with parking turnover more than 5 in major urban areas should be digitised by 2030	2030	x		x	x			x	
	• 314 intra-city and 358 inter city buses. • Out of the 314 intra-city buses, 96 BRT Buses to be deployed on 126 km route. The remaining buses would operate as conventional bus systems on secondary routes.	2050	x		x	x			x	
	13 passenger trains on 120 km route	2050	x		x					x

	Hydrogen pilot (Fuel cell based and Combustion based) with Light, Medium and Heavy vehicles	2050	x		x					
	Improve vehicle occupancy in light vehicles and taxis by 50% and 25% respectively by 2035	2035	x		x	x				
	• 25% modal shift for short (<3.5 km) trips from light vehicle, 2-W, and taxis to bicycling by 2040 50% modal shift for short (<2 km) trips from light vehicle, 2-W and taxis to walking by 2040	2040	x		x	x				
	100% of traffic signals in large urban areas should have smart CCTV systems by 2040	2040				x				x
	2025 Prepare DPR and secure funding for the feasibility study for: • A) LRT on Thiomphu – Paro route • B) Passenger train on Thimphu-Phuentsholing route	2025	x		x				x	
	2030 • Implement passenger trains on 97 km Thimphu Phuentsholing route • Implement LRT between Thimphu-Chuzom-Paro	2030	x		x				x	
	Implement BS-VII/ Euro VII by 2026	2026			x					
	Phase out import of ICE passenger vehicles after 2030 Cap annual import of 2- wheelers and light vehicles at 700 numbers and 5,500 numbers respectively after 2030	2035	x		x	x				
11	**Second Nationally Determined Contribution - BTN**									
	In presenting the 2 nd NDC, Bhutan maintains the commitment to remain carbon-neutral	2050	x							
	The mitigation measures have a cumulative mitigation potential of 5,283 Gg CO2e and are a mix of investments from relatively inexpensive low hanging interventions to large infrastructure investments up to an overall total investment requirement of USD 3,233 million till 2030.	2030	x							
	Private vehicle demand management through shared mobility, traffic system management carpooling, ride sharing and rental services, import restriction on internal combustion engine cars from 2030 and introducing annual import quota system.	2030	x		x	x				

(ATO National policy tracker)

Transport relevant sample projects:

A sample list of projects by the MDB highlights their focus with respect to the Aichi 2030 Declaration Goals.

Transport relevant projects

Year	Project name	Amount (million USD)	Goal 1a	Goal 1b	Goal 1c	Goal 2	Goal 3	Goal 4	Goal 5	Goal 6
2026	Bhutan Green Transport Project	25	x	x	x	x	x		x	x
2022	Master Plan for National Highways Connectivity	2		x			x	x		x
2025	Accelerating Transport and Trade Connectivity in Eastern South Asia - Bhutan Phase 2 Project	150		x			x	x		x
2024	Bhutan Climate and Disaster Resilience Development Policy Credit with a Catastrophe Deferred Drawdown Option	40		x						

(MDB Projects database)

References:

Asian Transport Outlook (ATO) + Country. (2024). ATO estimates based on Country Official Statistics	(ATO and Country estimates)
Asian Transport Outlook (ATO) + UNEP. (2024). ATO analysis of UNEP Index using latest data	(ATO analysis of UNEP data)
Coalition for Disaster Resilient Infrastructure (CDRI). (2023). Building & infrastructur. https://giri.unepgrid.ch/facts-figures/building-infrastructures	(CDRI, 2023)
Socioeconomic Data and Applications Center (SEDAC). (2023). SDG Indicator 11.2.1: Urban Access to Public Transport, 2023. https://sedac.ciesin.columbia.edu/data/set/sdgi-11-2-1-urban-access-publictransport-2023	(CIESIN-urban, 2023)
Socioeconomic Data and Applications Center (SEDAC). (2023). SDG Indicator 9.1.1: The Rural Access Index (RAI), 2023. https://sedac.ciesin.columbia.edu/data/set/sdgi-9-1-1-rai-2023	(CIESIN-rural, 2023)
Asian Transport Outlook (ATO). (2024). ATO National policy tracker. The trackers are based on the national level policies.	(ATO National policy tracker)
Emissions Database for Global Atmospheric Research (EDGAR). (2023). EDGAR - Emissions Database for Global Atmospheric Research. https://edgar.jrc.ec.europa.eu/	(EDGAR, 2023)
Ember. (2023). Yearly electricity data. https://ember-climate.org/data-catalogue/yearly-electricity-data/	(EMBER, 2023)
Global Burden of Disease (GBD). (2021). GBD Results. http://ghdx.healthdata.org/gbd-results-tool	(GBD, 2021)
International Council on Clean Transportation (ICCT). (2023). https://theicct.org/	(ICCT, 2023)
International Energy Agency (IEA). (2022). Fossil Fuels Consumption Subsidies 2022. https://www.iea.org/reports/fossil-fuels-consumption-subsidies-2022	(IEA, 2022)
International Monetary Fund (IMF). (2024). Climate Change Dashboard. https://climatedata.imf.org/pages/access-data	(IMF, 2024)
International Road Federation (IRF). (2024). https://irfnet.ch/data-statistics/4	(IRF, 2024)
International Trade Centre (ITC). (2024). Trademap. https://www.trademap.org/	(ITC, 2024)
Institute for Transportation and Development Policy (ITDP). (2022). Rapid Transit Database. https://www.itdp.org/rapid-transit-database/	(ITDP, 2022)
International Telecommunication Union (ITU). (2023). Statistics. https://www.itu.int/en/ITU-D/Statistics/Pages/stat/default.aspx	(ITU, 2023)

Koks, et al. (2023). A global assessment of national road network vulnerability. https://iopscience.iop.org/article/10.1088/2634-4505/acd1aa	(Koks, et al., 2023)
McDuffie et al. (2021). Global Burden of Disease-Major Air Pollution Sources. https://costofairpollution.shinyapps.io/gbd_map_global_source_shinyapp/	(McDuffie et al., 2021)
Organisation for Economic Co-operation and Development (OECD). (2022). Data Explorer. https://stats.oecd.org/Index.aspx?DataSetCode=CRS1#	(OECD, 2022)
International Organization of Motor Vehicle Manufacturers (OICA). (2023). Statistics. https://www.oica.net/production-statistics/	(OICA, 2023)
Tracking SDG 7. (2024). The energy progress report. https://trackingsdg7.esmap.org/	(Tracking SDG 7, 2024)
International Union of Railways (UIC). (2024). https://uic-stats.uic.org/	(UIC, 2024)
UN. (2023). Downloads. https://unstats.un.org/unsd/snaama/Downloads	(UN, 2023)
UN. (2018). Environmental Vulnerability Indicators. https://www.un.org/development/desa/dpad/least-developed-country-category/evi-indicators-ldc.html	(UN, 2018)
UN. (2021). Energy Statistics. https://unstats.un.org/unsd/energystats/	(UN, 2021)
UN. (2022). Population Database. https://population.un.org/wpp/	(UN, 2022)
UN Conference on Trade and Development (UNCTAD). (2024). Statistics. https://unctadstat.unctad.org	(UNCTAD, 2024)
UNEP. (2023). Global Materials Flow Database. https://www.resourcepanel.org/global-material-flows-database	(UNEP, 2023)
World Bank. (2022). https://data.worldbank.org/	(WB, 2022)
World Bank. (2023). PPI Database. https://ppi.worldbank.org/en/ppi	(WB, 2023)
World Economic Forum (WEF). (2020). Global Competitiveness Report Special Edition 2020. https://www.weforum.org/publications/the-global-competitiveness-report-2020/	(WEF, 2018)
World Helath Organisation (WHO). (2023). Global Status Report on Road Safety 2023. https://www.who.int/teams/social-determinants-of-health/safety-and-mobility/globalstatus-report-on-road-safety-2023	(WHO, 2023)
International Labour Organization (ILO). (2024). Statistics. https://www.ilo.org/global/statistics-and-databases/lang--en/index.htm	(ILO, 2024)
Asian Transport Outlook (ATO). (2024). ATO compilation of the MDB projects. The database is a compilation of the transport relevant projects undertaken by 3 MDBs - ADB, AIIB and World Bank having the project approval year 2019 or after.	(MDB Projects database)
Country official statistics. (varies). Country official statistics in the form of statistical yearbooks, handbooks, databanks etc.	(Country official statistics)

GDP data is sourced from (WB, 2022) and Population data from (UN, 2022)