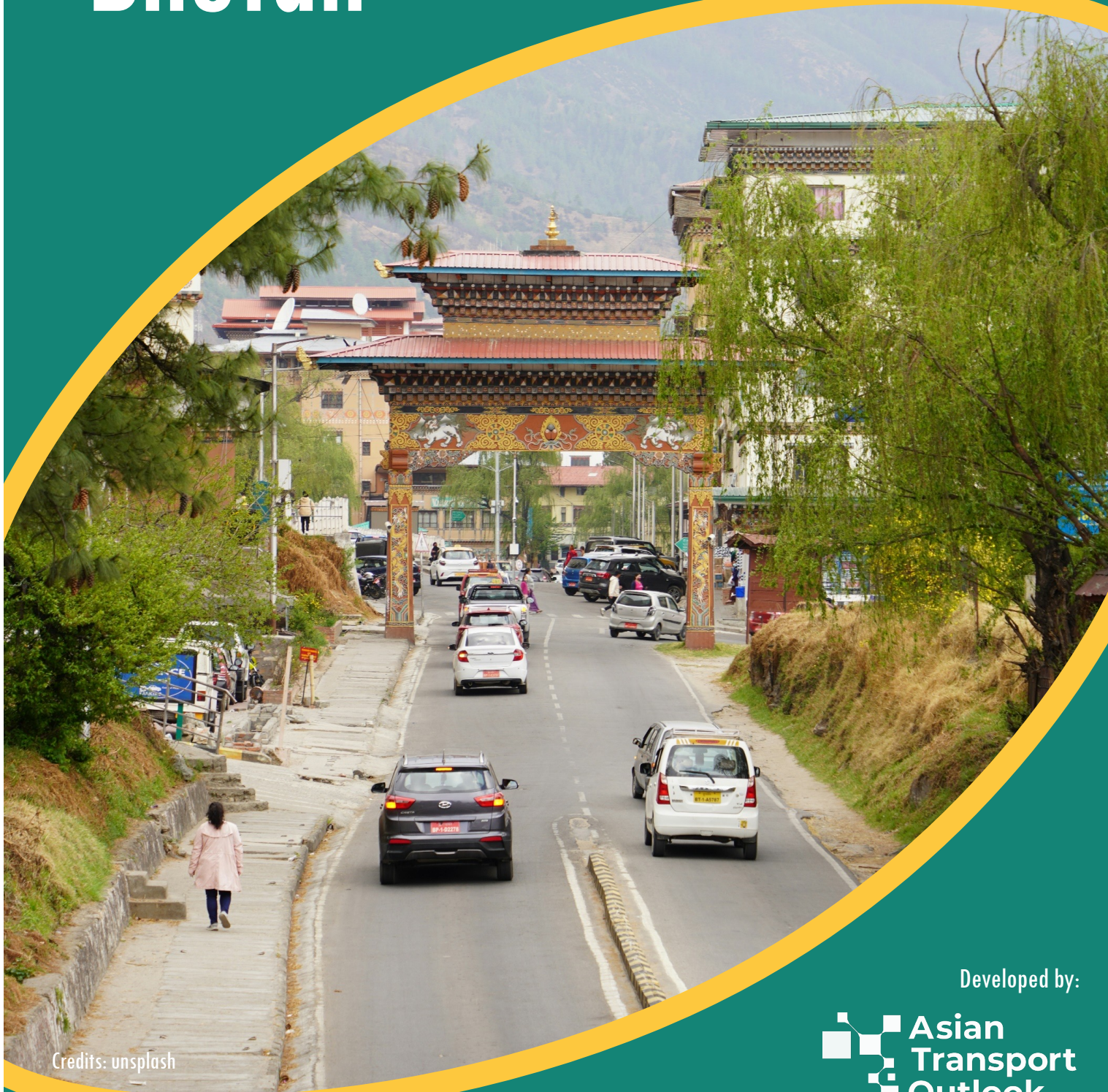


# Transport and Climate Profile

# Bhutan



Credits: unsplash

Developed by:



Developed with the support of:



**Introduction to the profiles:** These “Transport and Climate Profiles” are part of the research work entitled “Transport NDC Gap Analysis for Low- and Middle-Income Countries (LMICs) in Asia and the Pacific” which is being implemented and builds on the work of the Asian Transport Outlook (ATO), a project initiated and supported by the Asian Development Bank (ADB). ATO is also being supported by the Asian Infrastructure Investment Bank (AIIB). The research is being co-funded by UKAID through the UK Foreign, Commonwealth and Development Office (FCDO) under the High-Volume Transport (HVT) Applied Research Program managed by DT Global International Development UK LTD (DT Global). The research is being implemented under HVT057 (Transport Decarbonisation Index - <https://transport-links.com/funded-projects/transport-decarbonisation-index-tdi>) whose lead research supplier is the Partnership on Sustainable, Low Carbon Transport. These profiles are designed to complement the main report of the research entitled *Bridging the Gap: A Deep Dive into NDCs and Transport Policy Landscapes in Low- and Middle-Income Asian Economies*. While intended as supplementary materials, they also function as standalone knowledge products. All the related knowledge products will be made available through <https://asiantransportoutlook.com/analytical-outputs/ndc-analysis> and <https://asiantransportoutlook.com/analytical-outputs/transportclimateprofiles/>

The Asian Transport Outlook (ATO) is an initiative that aims at strengthening the knowledge base on transport in the Asia-Pacific region. It supports the planning and delivery of transport-related assistance in Asia, supports wider transport policy making, and helps track global and regional processes related to sustainable development. For example, ATO is the monitoring mechanism for the Aichi 2030 Declaration on Environmentally Sustainable Transport – Making Transport in Asia Sustainable (2021-2030) which was adopted by more than 20 countries in Asia-Pacific through the High Level Environmentally Sustainable Transport Forum (EST) that is organized by the United Nations Centre for Regional Development (UNCRD)-DSDG/UN DESA, along with its partners. For more information, visit [asiantransportoutlook.com](http://asiantransportoutlook.com)

This profile is structured into two main sections: Data Insights and Policy Insights. Under “Data Insights”, individual components at the intersection of transport and climate change are detailed. Similarly, the “Policy Insights” section outlines various policy documents, measures, and targets.

**Disclaimer:** The ATO project collects, collates, organizes, and presents transport-relevant data from publicly available official sources and reputable, peer-reviewed secondary sources. Users should be aware that: the ATO does not generate any primary data; the source data may contain inconsistencies or gaps; despite rigorous quality control measures, the ATO cannot guarantee the absolute accuracy, completeness, or suitability of the data for specific purposes.

Users of the data and derived knowledge products are strongly advised to: independently verify and validate all data before use; exercise professional judgment in data interpretation and application; and acknowledge that any reliance on ATO data is at the user’s own risk. Users should also note that data may be subject to updates or revisions. It is the user’s responsibility to ensure they are working with the most current version of the data available.

The ATO, and all affiliated organizations: make no representations or warranties, express or implied, regarding the data’s accuracy, completeness, or fitness for any particular purpose; and disclaim all liability for any direct, indirect, incidental, consequential, or special damages arising from the use of or reliance upon ATO data or derived products. The views expressed in this knowledge product do not necessarily reflect the official policies of any of the organisations mentioned above.

The designations, presentations, and materials in this publication, including citations, maps, and bibliography, do not express or imply any opinion on the part of the ATO or involved organizations regarding the legal status of any country, territory, city, area, or its authorities, or concerning the delimitation of frontiers or boundaries. By using the data or derived products, users agree to indemnify and hold harmless the ATO, its supporting organizations, and all affiliated organizations from any claims, losses, or damages resulting from such use.

**Suggested Citation:**

Asian Transport Outlook (ATO). (2024). Transport and Climate Profile: Bhutan, <https://asiantransportoutlook.com/analytical-outputs/countryprofiles/>

For any questions or information related to this publication, please write to [asiantransportoutlook@gmail.com](mailto:asiantransportoutlook@gmail.com).

Photographs used are copyright free.

**Transport and Climate Profile: Bhutan**

2024

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

# Contents

## Data Insights

- I Transport and Climate Change
- II Transport Energy Consumption
- III Adaptation and Resilience
- IV Other Externalities
- V Vehicle Fleet
- VI Urban Transport
- VII Transport Investments

## Policy Insights

- VIII Transport and Climate Policy Documents
- IX Representation of Transport in Key Climate Policy Documents
- X Distribution of Transport and Climate Policy Measures in Policy Documents
- XI National Policy Priorities on Transport
- XII Direct GHG Targets
- XIII Indirect Transport Climate Change Targets
- XIV Transport and Climate Policy Measures



# Executive Summary

Bhutan, categorized as a low- and lower-middle-income country within South Asia, faces interconnected transport and climate change challenges. Bhutan's transport sector contributes significantly to its greenhouse gas emissions.

## CO2 Emissions:

- In 2023, Bhutan's transport sector emitted 428 thousand tonnes of CO<sub>2</sub>, accounting for 22% of the country's total emissions. Although Bhutan has experienced significant growth in transport emissions, with an annual increase of 7% since 2015, this growth rate has slowed compared to the 10% annual increase observed before the Paris Agreement. The road sector is the primary contributor to transport emissions, accounting for 86% in 2022 and 14% of total economy-wide emissions. Bhutan's transport emissions intensity has decreased from 36.5 gCO<sub>2</sub> per USD in 2000 to 33.5 gCO<sub>2</sub> per USD in 2023. While this represents progress, Bhutan's transport emissions intensity exceeds Asia-Pacific average and the averages for low and lower-middle-income countries and South Asia.

## Energy Consumption:

- Overall: Transport sector energy consumption grew 8% annually between 2000-2010 and has since slowed to 3% annually. Bhutan's energy intensity per GDP has also improved.
- Fuel Source: Oil products remain the primary energy source for road transport, with minimal contributions from biofuels and electricity.
- Grid Emissions: Bhutan's grid emission factor is significantly lower than the Asia-Pacific average, reflecting its reliance on hydropower.

## Adaptation and Resilience:

- Vulnerability: Bhutan is estimated to experience an average annual loss of 4.02 million USD to its transport infrastructure due to climate-related hazards, representing 0.04% of its GDP. This loss is entirely attributed to roads. Bhutan's road network is particularly vulnerable, ranking 202nd out of 208 countries in terms of national road vulnerability, highlighting a lack of redundancies in the face of disruptions. However, Bhutan is less susceptible to sea-level rise as none of its population resides in low-elevation coastal zones.

## Vehicle Fleet:

- Growth: The vehicle fleet has grown rapidly, reaching 131 vehicles per thousand people in 2022, though it remains below regional averages.
- Electrification: Bhutan has made strides in electric vehicle imports, with 12.4% of imported buses being electric between 2017-2023. However, the overall share of electric vehicles in imports remains low compared to the region. Bhutan scored 65 out of 100 on the 2024 E-mobility Readiness Index, indicating moderate preparedness for the transition to electric vehicles. While the country demonstrates strong potential in clean energy access (24 points), it faces challenges in other key areas. Access to technology (10 points), the availability of supporting EV policies (15 points), and access to financial instruments (16 points) are areas that require further development to accelerate the adoption of electric mobility in Bhutan.

### **Urban Transport - Limited Infrastructure:**

Bhutan lacks urban transit systems like BRT or LRT. Public transport access in urban areas is also limited.

### **Investments - ODA:**

Bhutan has received significant official development assistance (ODA) for the transport sector, primarily focused on roads.

### **Policy Landscape - NDCs:**

The latest Nationally Determined Contribution (NDC), adopted in 2021, reaffirms Bhutan's commitment to remaining carbon neutral. This commitment extends to the transport sector, with the NDC including a greenhouse gas emissions target for transport. While the NDC does not set an economy-wide emissions target, it does contain specific targets related to vehicle restrictions, such as import, age, access, sale, and taxation. Bhutan does not have a Long-Term Strategy (LTS), so there are no further targets related to economy-wide emissions or transport-related emissions within that framework.

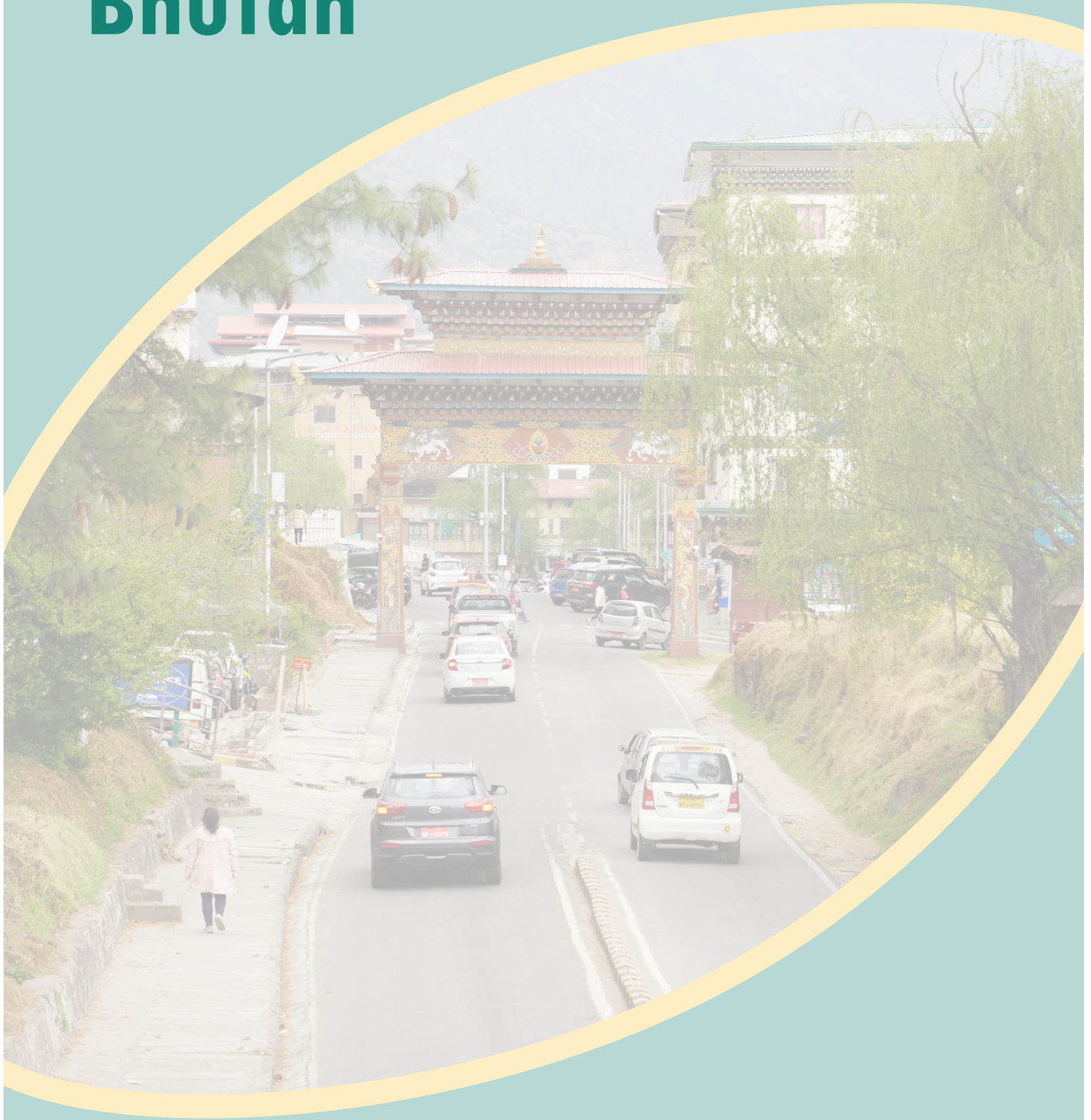
Bhutan's transport policy documents reveal a broad range of climate change targets. These include measures to promote active transport infrastructure expansion, bike sharing, electric vehicle (EV) charging infrastructure, and improvements to freight rail and public transport systems. Additionally, the policies address general infrastructure enhancements, land use planning, parking measures, hydrogen utilization, increased car occupancy, modal shift, and energy consumption reduction. There's also a focus on technology transfer, urban passenger rail infrastructure, vehicle efficiency standards, and restrictions on vehicle imports, age, access, sale, and taxation.

### **NDC Gaps and Policy Opportunities**

1. **Quantified Targets:** The NDC lacks specific, quantified targets for reducing transport emissions. Bhutan could consider setting ambitious targets for electric vehicle adoption, mode shift to public transport, and energy efficiency improvements.
2. **Adaptation Focus:** While Bhutan has policies addressing resilience, they are less comprehensive than mitigation measures. Prioritizing adaptation measures for transport infrastructure, particularly roads, is crucial given the country's vulnerability to hazards.
3. **Urban Transport:** Expanding and improving public transport in urban areas could reduce private vehicle use and emissions. Implementing bus rapid transit systems or other mass transit options should be considered.
4. **Energy Diversification:** Increasing the use of biofuels and electricity in the transport sector could further reduce reliance on fossil fuels and lower emissions.
5. **Data Collection:** Improving data collection and monitoring for transport-related emissions and energy consumption would enable better tracking of progress and inform policy decisions.

By addressing these gaps and seizing policy opportunities, Bhutan can further align its transport sector with its climate goals, ensuring a sustainable and resilient transportation system.

# Data Insights Bhutan



# Bhutan

## Transport and Climate Profile

Population (2024)  
**792.4 thousand**

Urban population  
**45%**

Below 18 y.o.  
**28%**

Population density  
**21 persons per sqkm**

Rural population  
**55%**

Above 60 y.o.  
**10%**

Subregion  
(1) **South Asia**

Gross domestic product  
(1) (GDP PPP, 2023)  
**12.75 billion USD**

(1) Domestic consumption per capita, tonnes (2024)  
**29.5 tonnes**

(1,2) *Domestic consumption is the total amount of materials directly used in the economy (used domestic extraction plus imports), minus the materials that are exported.*

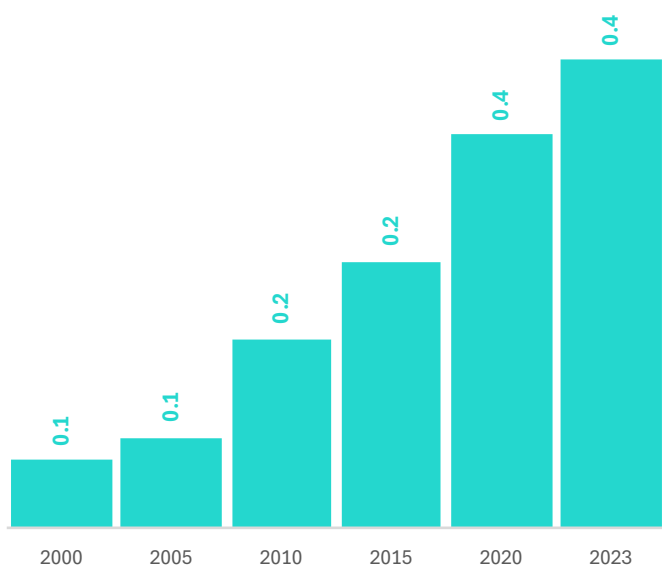
Income class  
**Low and lower middle income**

GDP per capita (PPP, 2023)  
**16,190 USD** (1,2)  
(2)

(3)

## I. Transport and Climate Change

Transport fossil CO2 emissions, million tonnes



*In 2010, transport contributed 19% of total fossil CO2 emissions. By 2023, transport contributed 22%.*

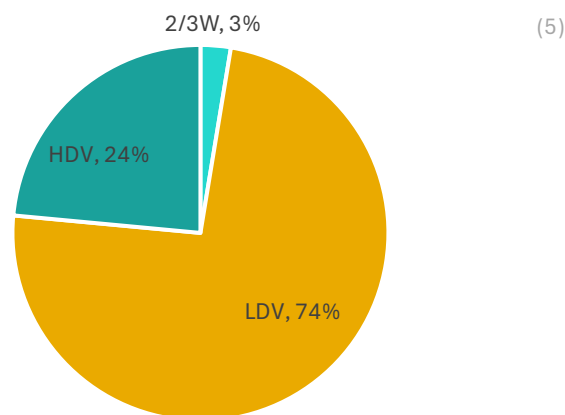
Share of transport CO2 emissions by mode (2022)

(4)   Road	<b>86.1%</b>	Rail	<b>0.0%</b>	(4)
Navigation	<b>7.9%</b>	Aviation	<b>6.0%</b>	(4)

*Navigation and aviation only includes domestic transportation*

*Between 2000-2015, road transport contributed 76% in transport fossil CO2 emissions. Between 2016-2022, road transport contributed 85%.*

Road transport CO2 emissions (well-to-wheel), share by mode (2022)



## Transport CO2 emissions intensity (2023)

**34 gCO2 per USD**

(2,4)

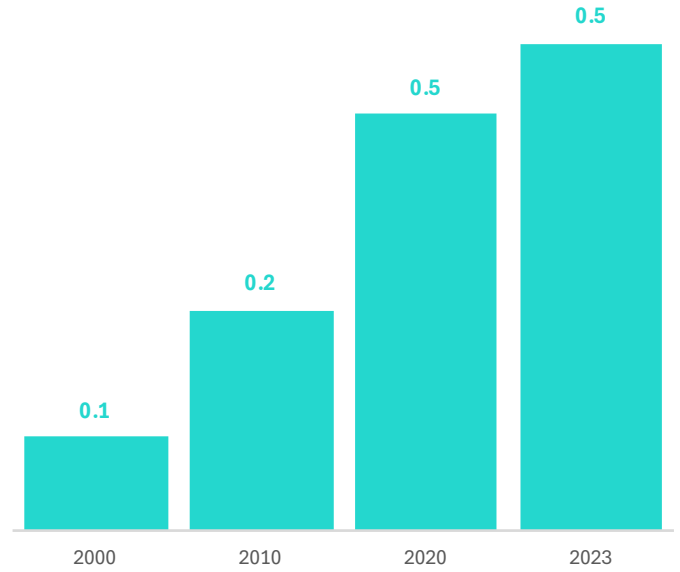
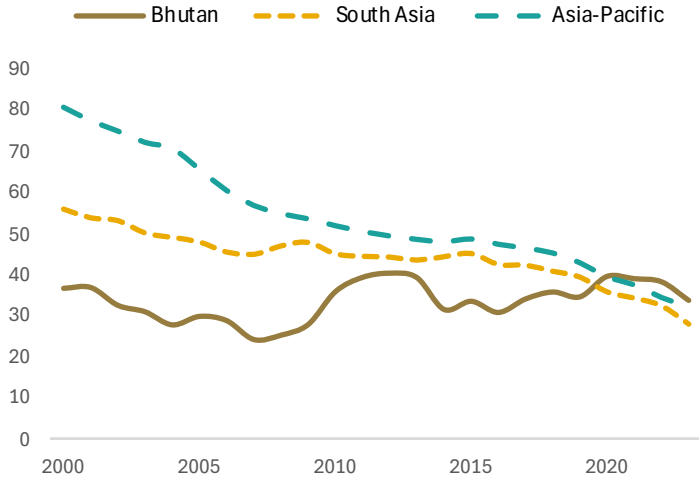
*Asia-Pacific average is 32 gCO2 per USD*

## Transport fossil CO2 emissions per capita, tonnes

(1,4)

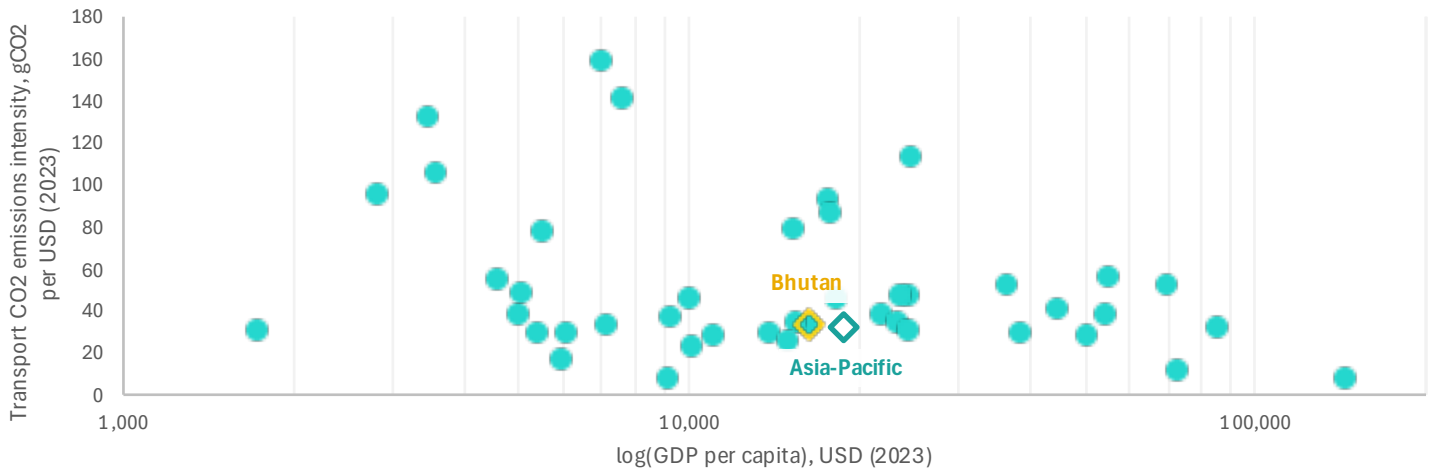
## Transport CO2 emissions intensity trend, gCO2 per USD

(2,4)



## Transport CO2 emissions intensity in Asia-Pacific, gCO2 per USD

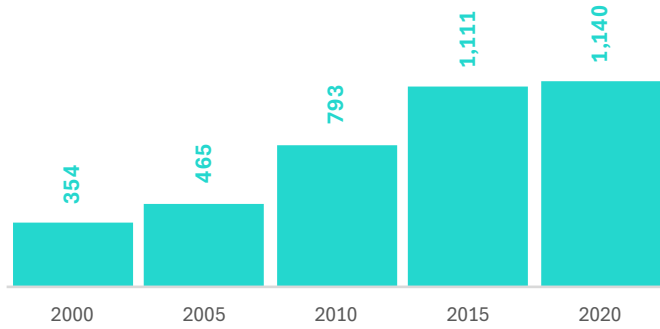
(2,4)





II. Transport Energy Consumption

Transport energy consumption, TJ

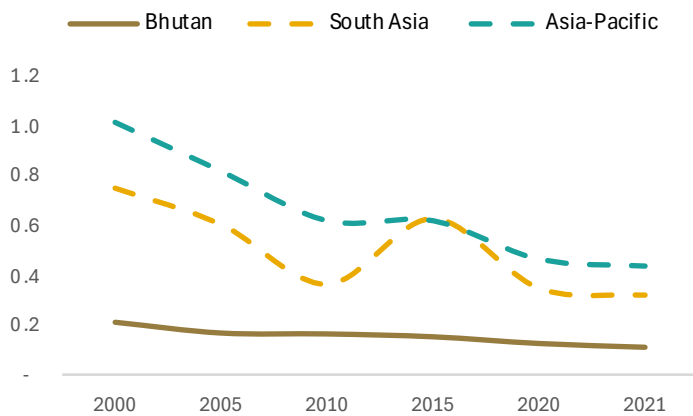


Transport energy intensity (2021)

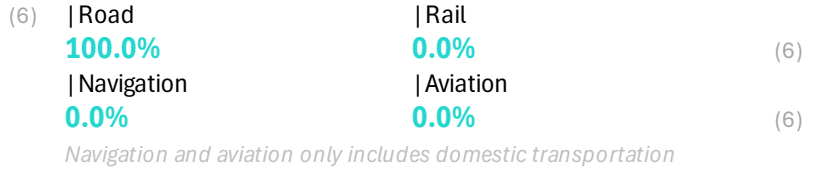
0.1 MJ per USD

Asia-Pacific average is 0.4 MJ per USD

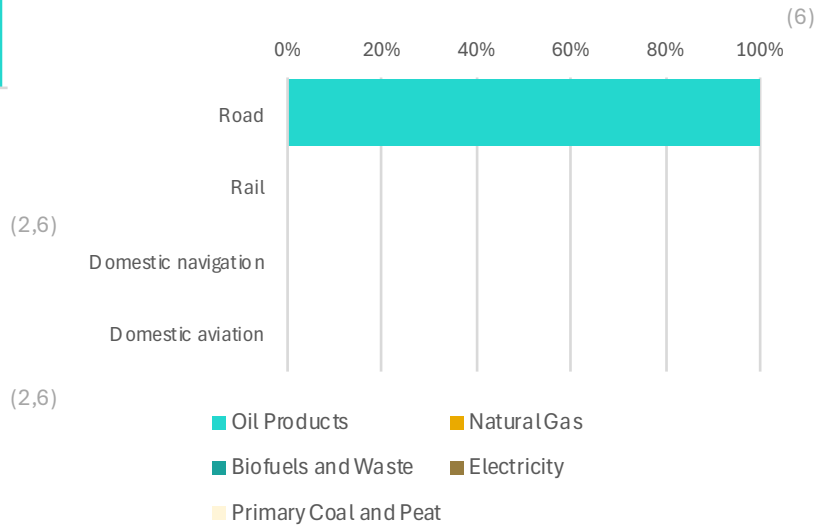
Transport energy intensity trend, MJ per USD



Share of transport energy consumption by mode (2021)



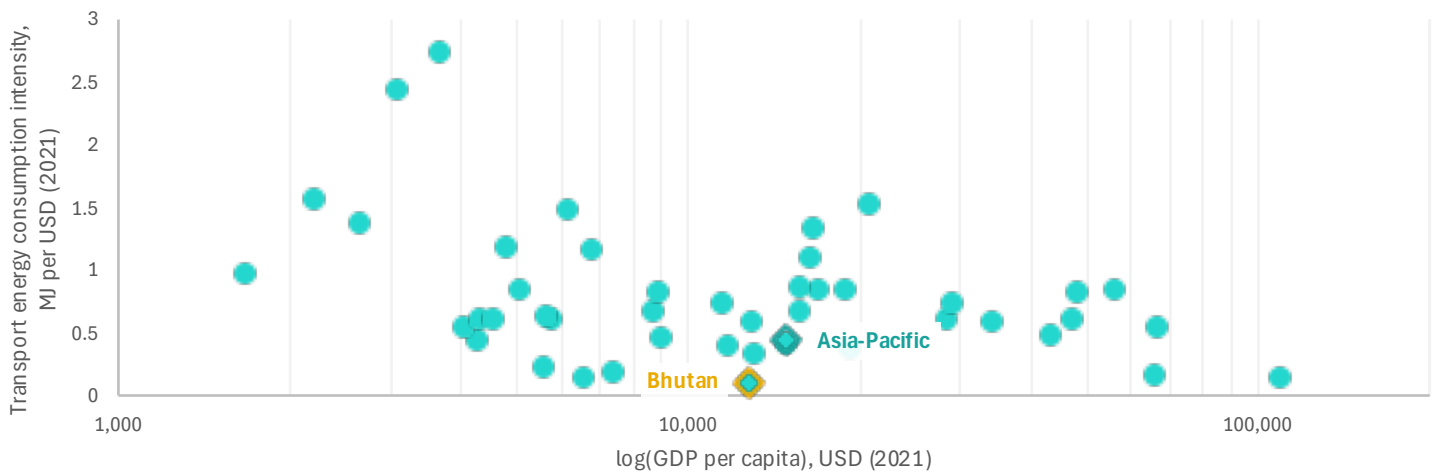
Share of transport energy consumption by source (2021)



Share of transport in renewable energy consumption



Transport energy intensity in Asia-Pacific, MJ per USD

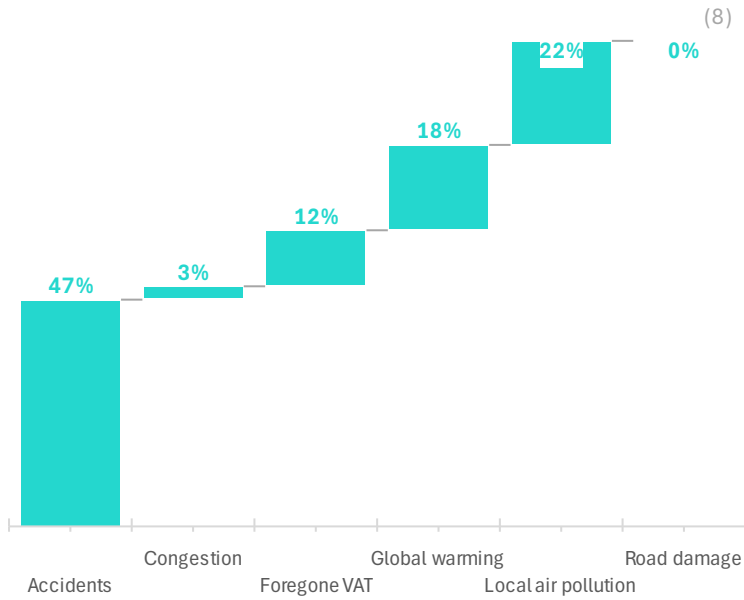


Transport fossil fuel subsidies, cumulative (2010-2022)

**None**

0.0% of Asia-Pacific total

Estimated externalities due to fossil fuel subsidies



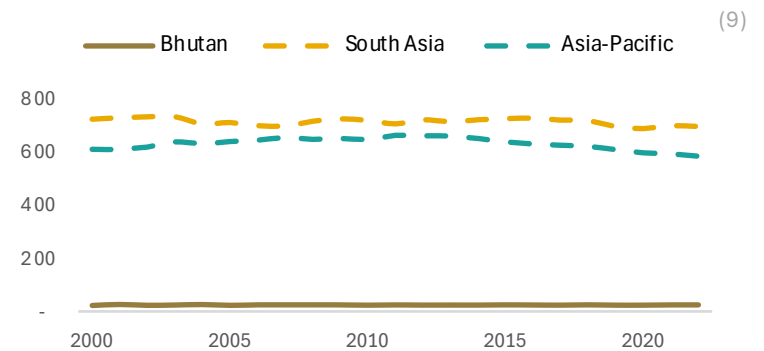
Data includes all sectors and all fuel types

Grid emission factor (2022)

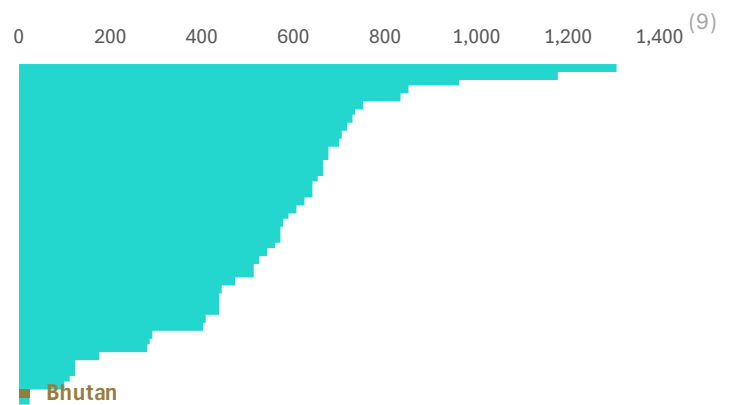
(7) **24 gCO<sub>2</sub> per kWh**

(9)

Grid emission factor trend, gCO<sub>2</sub> per kWh



Grid emission factors in Asia-Pacific, gCO<sub>2</sub> per kWh



### III. Adaptation and Resilience

Average annual losses to transport infrastructure due to hazards (2023)

**4 million USD**

Road	Rail
<b>100%</b>	<b>0%</b>
Ports	Airports
<b>0%</b>	<b>0%</b>

National road vulnerability index ranking (2023)

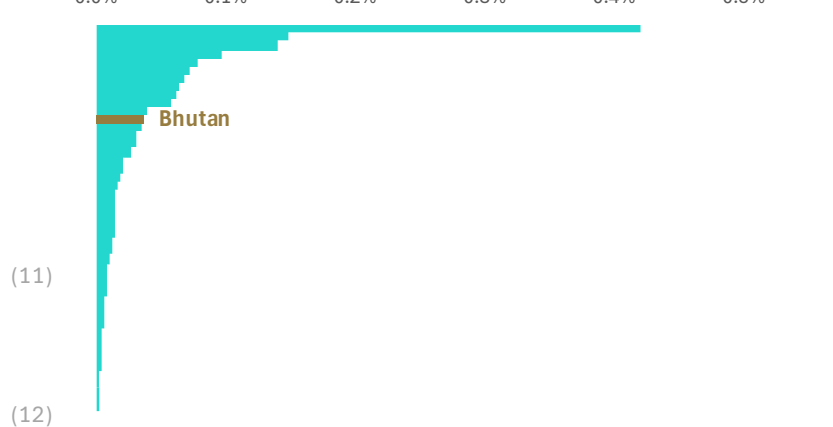
**202nd out of 208 countries**

Share of population in low elevated coastal zones (2018)

**n.d.**

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

(10) 0.0% 0.1% 0.2% 0.3% 0.4% 0.5% (10)

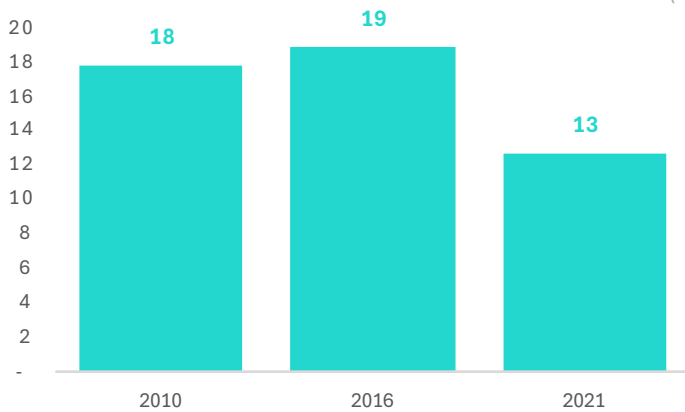


IV. Other Externalities

Road crash fatalities (2021)

**95 deaths**

Road crash fatality rate per 100 thousand population



Asia-Pacific average is 16 fatalities per 100 thousand population

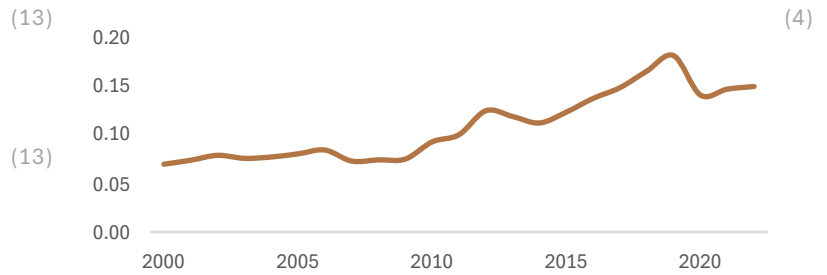
Rural access index (2023)

**63%**

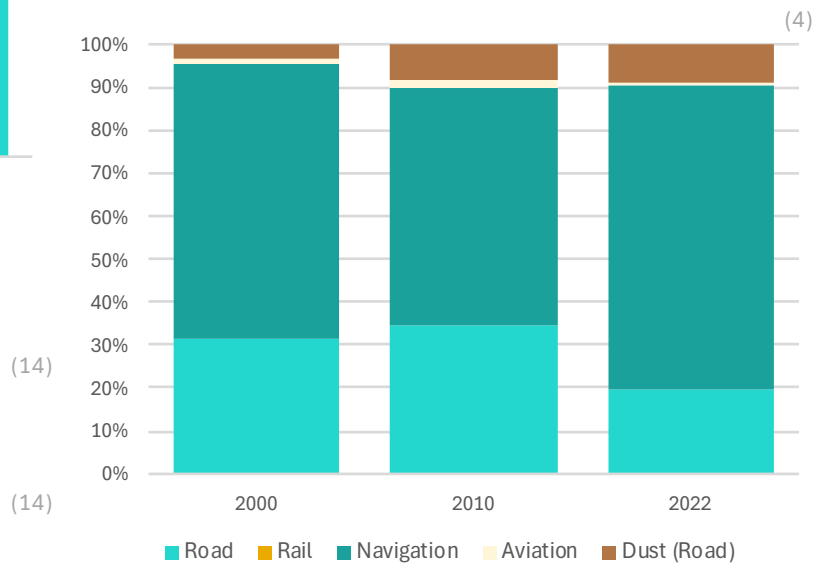
Rural population without access to all-season roads (2023)

**0.2 million**

Transport PM 2.5 emissions trend, thousand tonnes



Transport PM 2.5 emissions share by source



V. Vehicle Fleet

Road vehicles (2022)

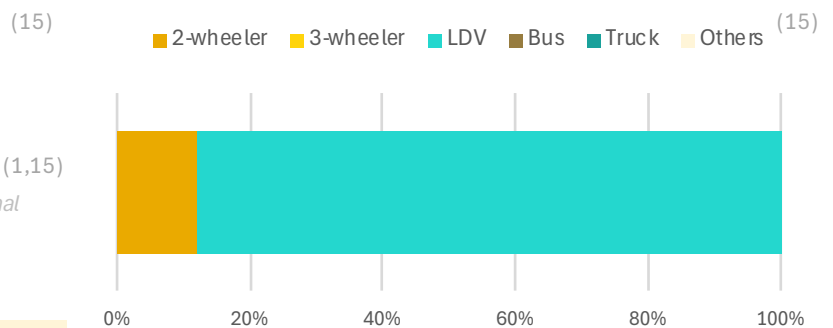
**102 thousand vehicles**

Road vehicle motorization rate (2022)

**131 vehicles per thousand population**

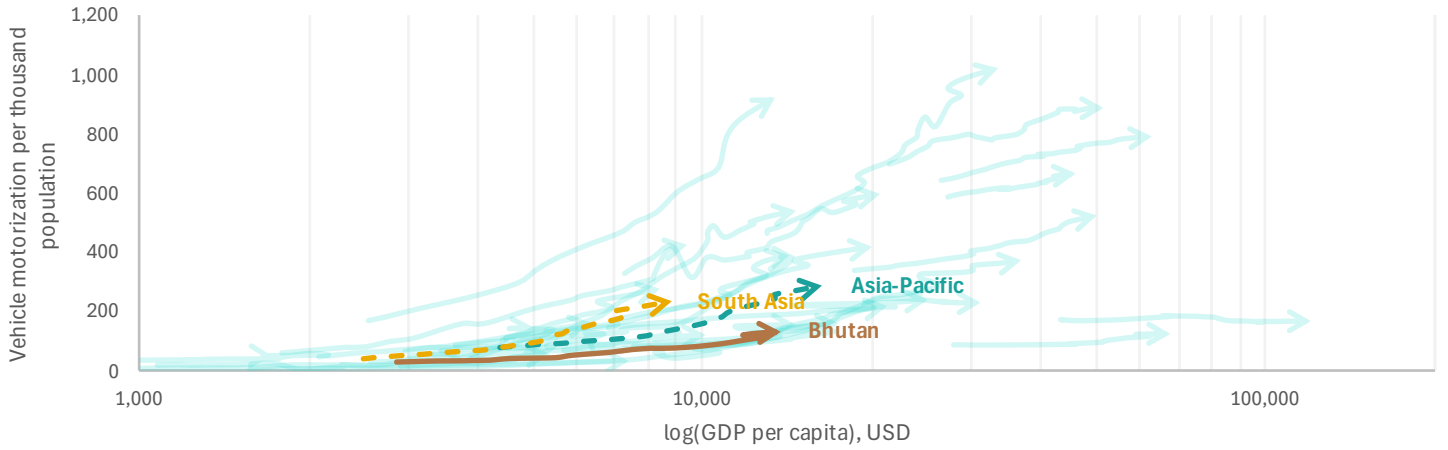
Road vehicles include 2- and 3-wheelers, LDVs, buses and other informal public transport, trucks, and other unclassified types

Share of vehicles by type



In 2000, Bhutan had 29 vehicles per thousand population. By 2022, this has increased to 131 compared with Asia-Pacific average of 577 in 2022.

Vehicle motorization per thousand population in Asia-Pacific (2000-2022)



Bus import value (2015-2023)

**22.8 million USD**

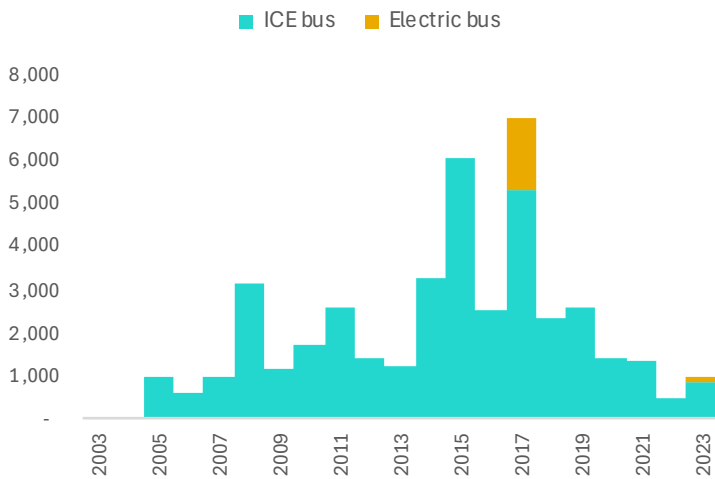
(16)

Bus vehicle production, units

(17)

Bus import value, thousand USD

(16)



E-mobility Readiness Index (2024)

(18)

Technology & Market	Policy
<b>10/25</b>	<b>15/25</b>
Energy	Financial
<b>24/25</b>	<b>16/25</b>
Overall	
<b>65/100</b>	

Electric road vehicle import value (2017-2023)

**2.1 million USD**

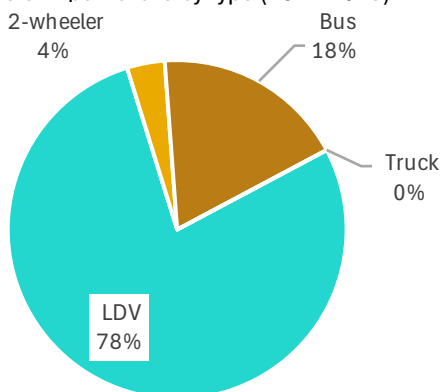
(16)

Electric road vehicle share in total road vehicle import value trend

(16)

Electric road vehicle import share by type (2017-2023)

(16)





VI. Urban Transport

Urban rapid transit length (2021)

BRT	LRT
None	None
Metro	
None	

(19)

(19)

Urban rapid transit ratio in Asia- Pacific, kilometers per million urban population (2021)

(1,19)

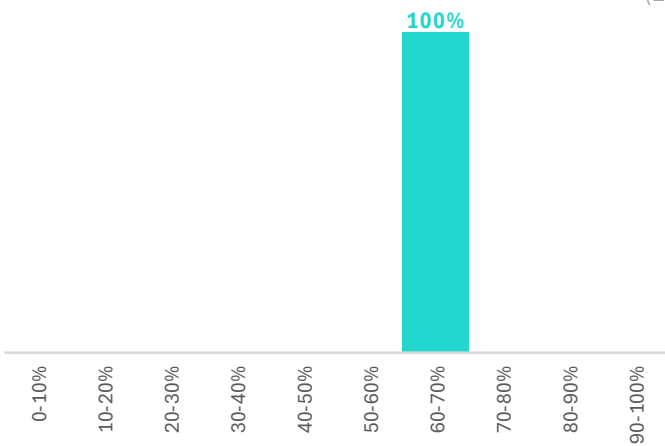
Urban rapid transit ratio (2021)

NA (1,19)

Urban rapid transit ratio, kilometers per million urban population (2000-2021)

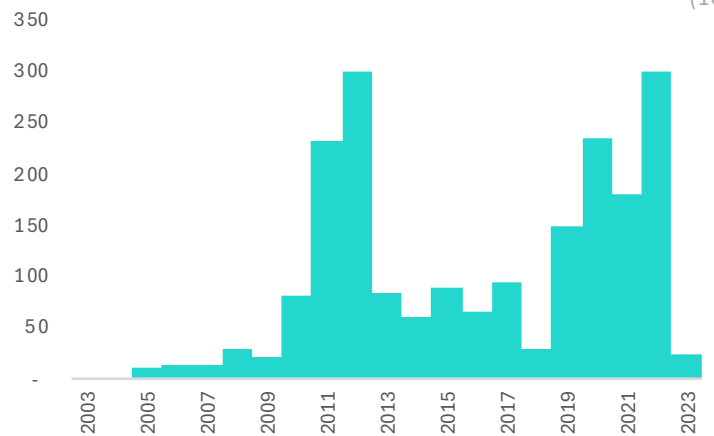
Share of cities by level of access to public transport (out of 1 cities)

(20)



Bicycle import value, thousand USD

(16)



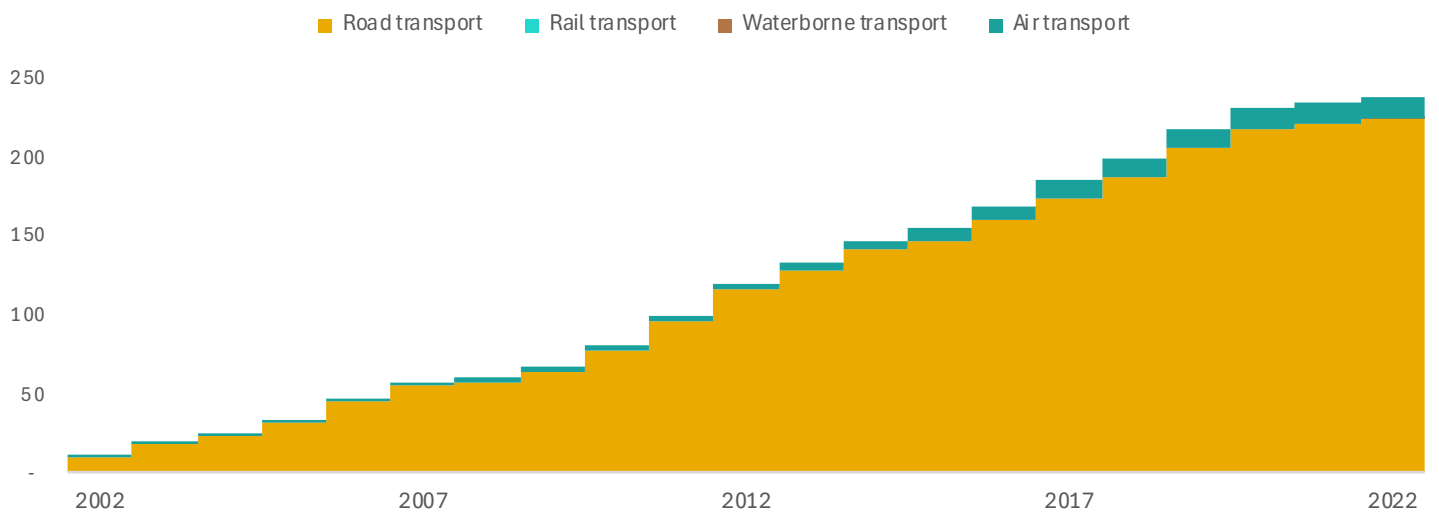
VII. Transport Investments

Public-private partnership investments in the transport sector, million USD

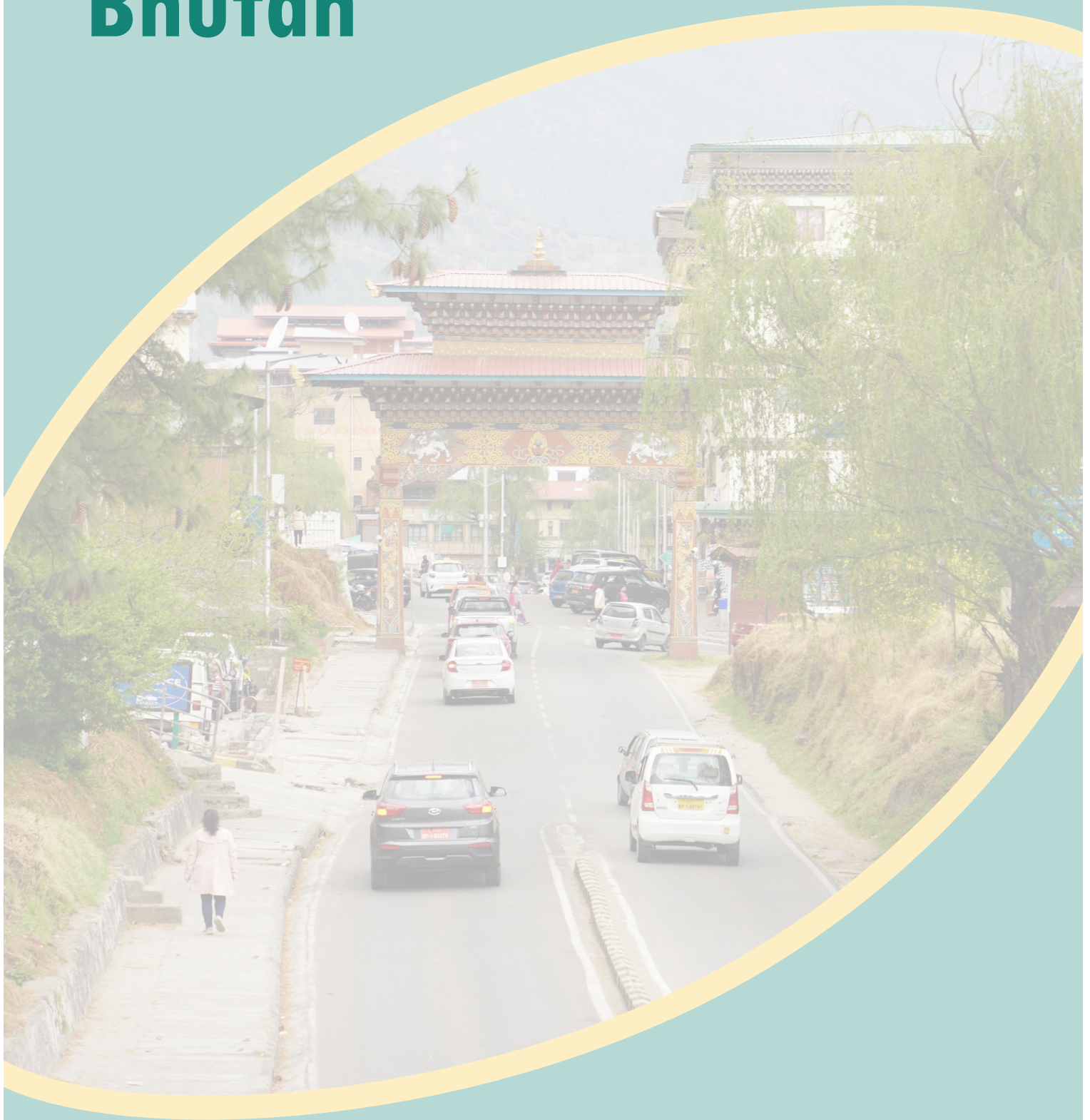
(21)

Official development assistance in the transport sector, million USD

(22)



# Policy Insights Bhutan



## VIII. Transport and Climate Policy Documents

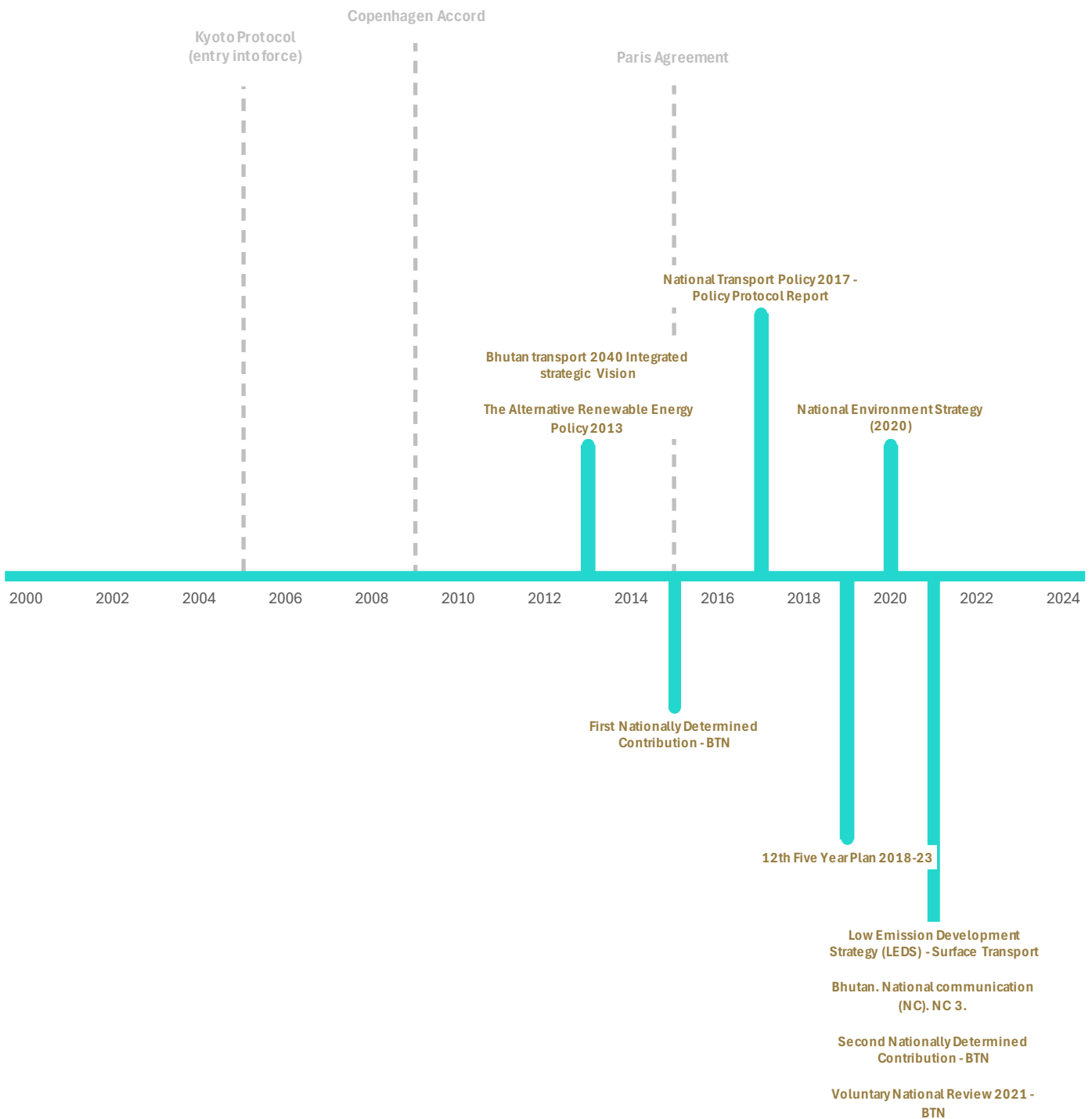
### Transport-related policy documents in Bhutan

*Selection made based on the number of climate change mitigation and adaptation policy measures*

Nationally Determined Contributions of Bhutan

2015: First Nationally Determined Contribution - BTN

2021: Second Nationally Determined Contribution - BTN





IX. Representation of Transport in Key Climate Policy Documents

Nationally Determined Contributions

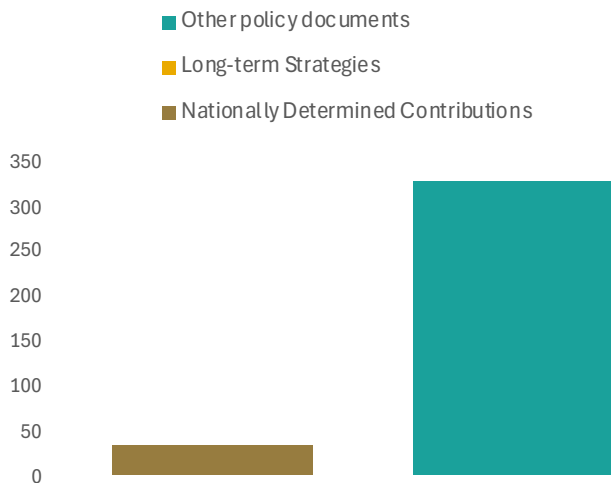
		Road transport	Rail transport	Domestic navigation	Domestic aviation	Urban transport
<i>Second Nationally Determined Contribution - BTN (adopted in 2021)</i>	Mitigation measures	Yes	Yes			Yes
	Mitigation targets	Yes				
	Adaptation measures	Yes				
	Adaptation targets					

Long-term Strategies

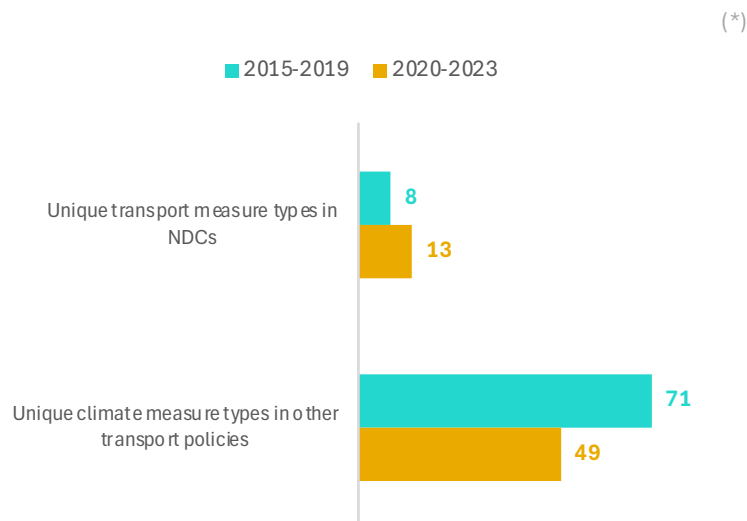
		Road transport	Rail transport	Domestic navigation	Domestic aviation	Urban transport
None	Mitigation measures					
	Mitigation targets					
	Adaptation measures					
	Adaptation targets					

X. Distribution of Transport and Climate Policy Measures in Policy Documents

Number of policy measures by source

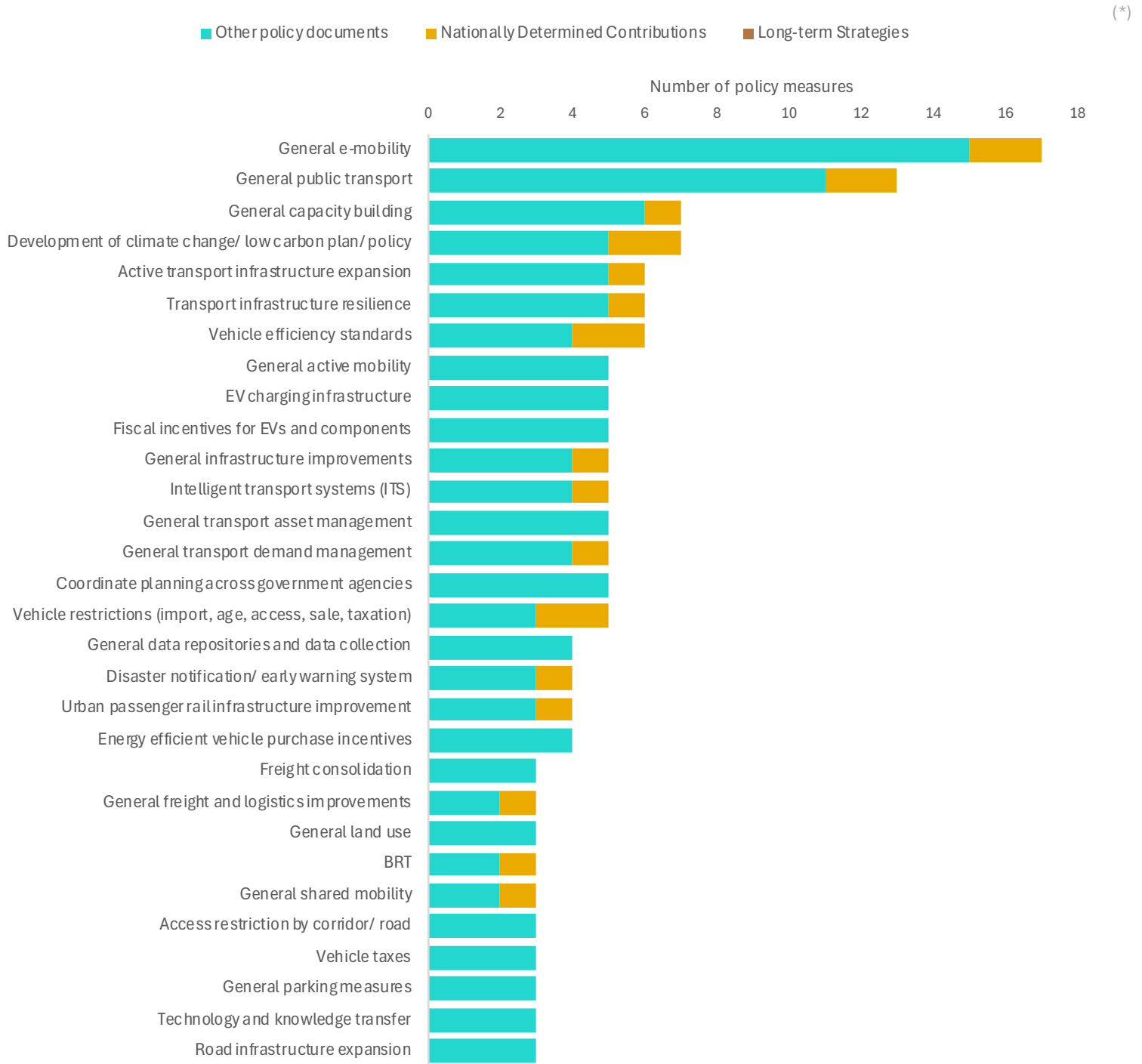


Integration of climate ambition, unique number of policy measures in (\*) NDCs and other transport policies

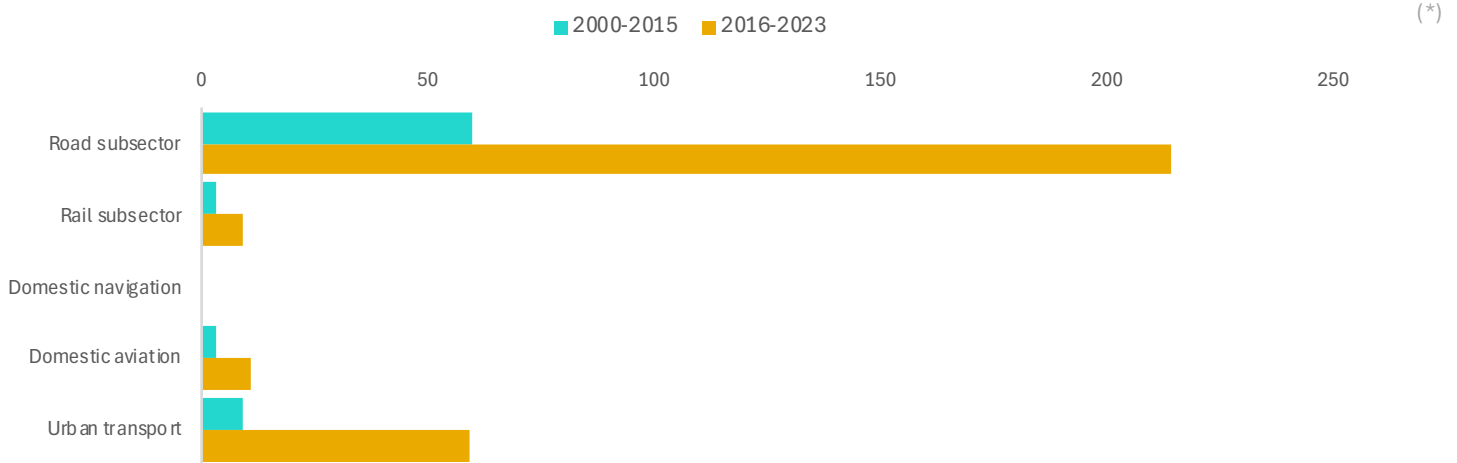


XI. National Policy Priorities on Transport

Priority policy measures on climate change mitigation and adaptation in transport (top 30)



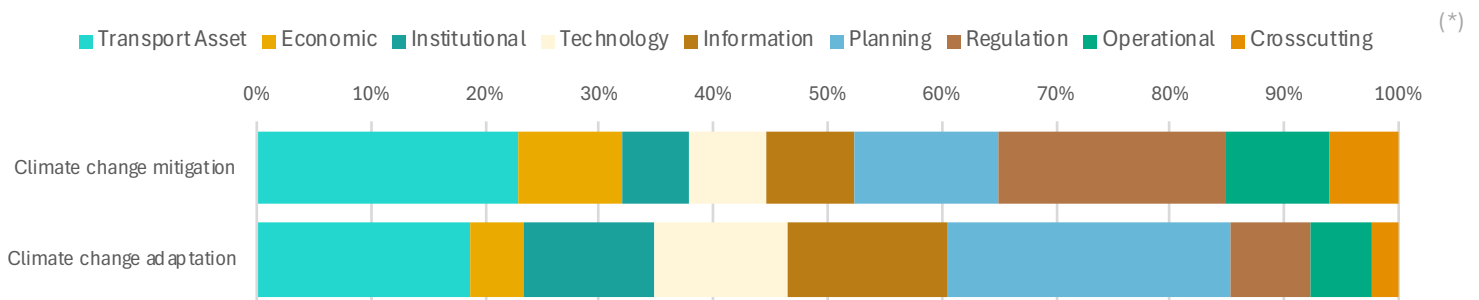
Number of climate change policy measures by subsectors



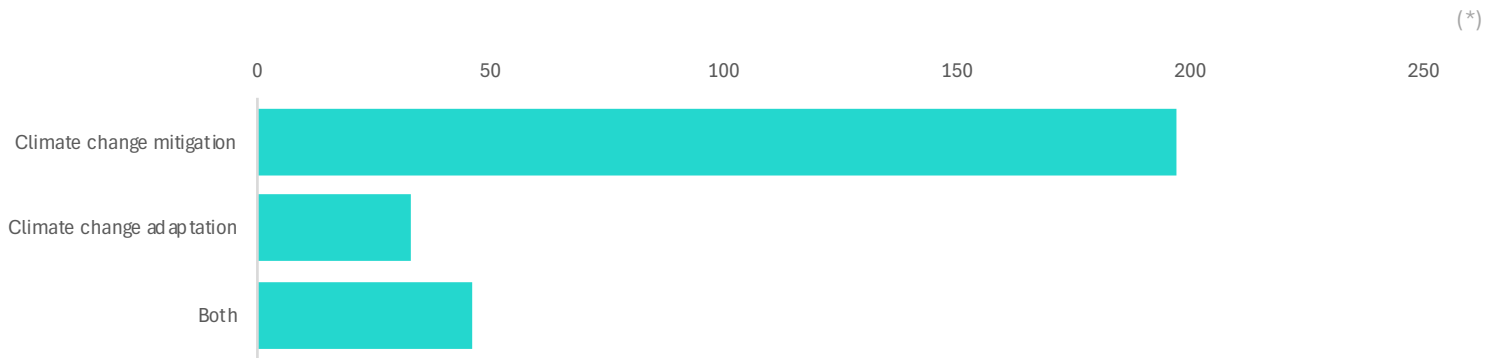
Number of climate change policy measures by passenger vs. freight



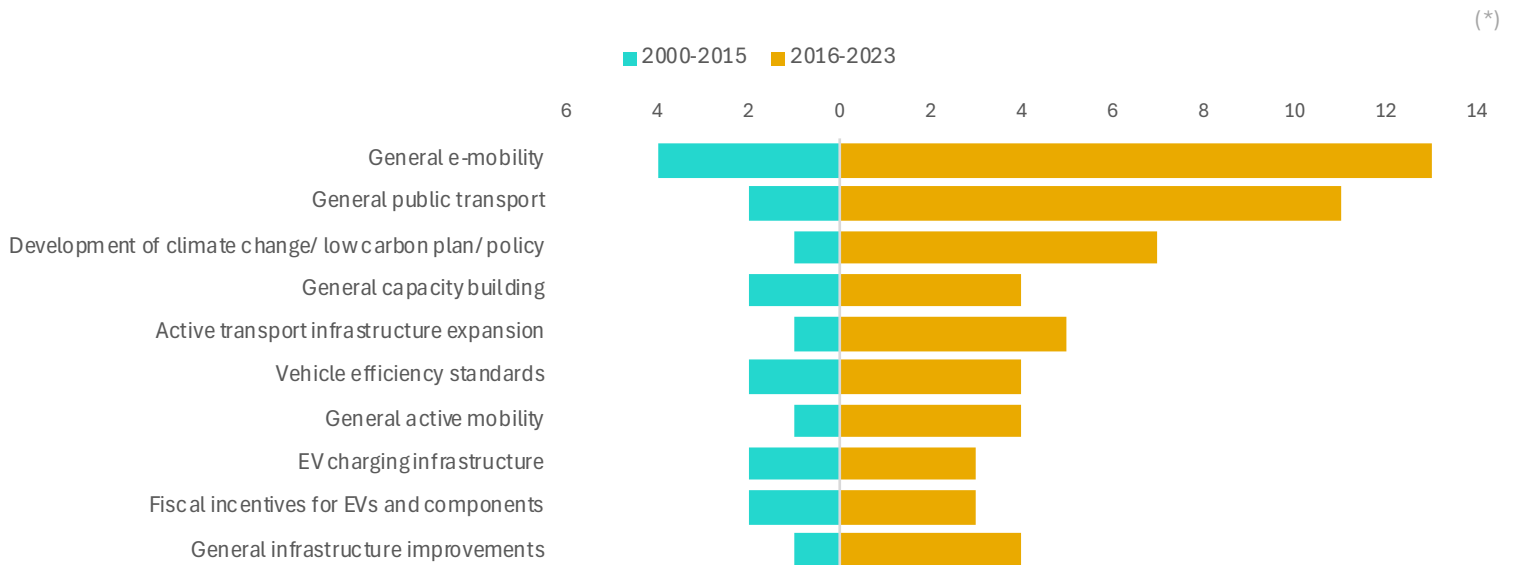
Transport-related climate change policy measures by framework



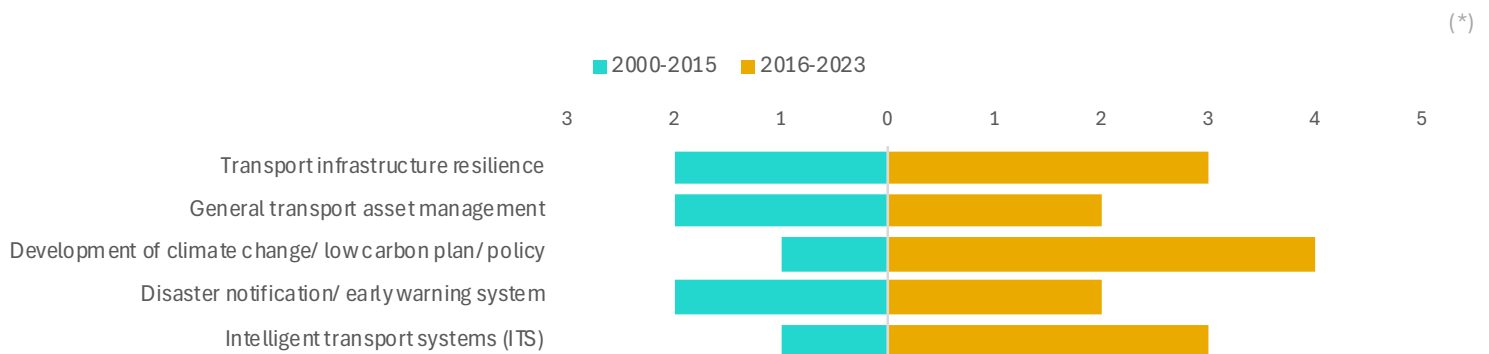
### Number of climate change mitigation vs. climate change adaptation policy measures



### Climate change mitigation top 10 typology, number of policy measures



### Climate change adaptation top 5 typology, number of policy measures





## XII. Direct GHG Targets

This table contains transport-relevant (e.g. economy-wide; sector-specific) GHG emissions targets as explicitly mentioned in the policy documents of Bhutan

Document	Year published	Target	Target year
<b>Economy-wide emissions</b>			
<b>Net zero, carbon neutrality, and other long-term climate action</b>			
Second Nationally Determined Contribution - BTN	2021	In presenting the 2 nd NDC, Bhutan maintains the commitment to remain carbon-neutral	2050
<b>Transport GHG emission</b>			
Second Nationally Determined Contribution - BTN	2021	The mitigation measures have a cumulative mitigation potential of 5,283 Gg CO <sub>2</sub> e 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

### XIII. Indirect Transport Climate Change Targets

This table shows non-GHG targets as specified in the policy documents in Bhutan which indirectly benefit climate change mitigation and adaptation in the transport sector

Document	Year published	Target	Target year
<b>Vehicle restrictions (import, age, access, sale, taxation)</b>			
<b>Second Nationally Determined Contribution - BTN</b>	<b>2021</b>	<b>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.</b>	<b>2030</b>
Low Emission Development Strategy (LEDS) - Surface Transport	2021	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
<b>Active transport infrastructure expansion</b>			
Low Emission Development Strategy (LEDS) - Surface Transport	2021	• >75% of urban road should be covered with dedicated NMT tracks Construct min. 10 km of footpath every year	2050
<b>Bike sharing</b>			
Low Emission Development Strategy (LEDS) - Surface Transport	2021	Launch PBS system in Thimphu city	2025
<b>EV charging infrastructure</b>			
Low Emission Development Strategy (LEDS) - Surface Transport	2021	1 public charging point for 6 Evs	2050
<b>Freight rail infrastructure improvement</b>			
Low Emission Development Strategy (LEDS) - Surface Transport	2021	• 6 trains on 182 km route connecting all urban towns	2050
<b>General active mobility</b>			
Low Emission Development Strategy (LEDS) - Surface Transport	2021	• 18,515 public bicycles by 2050 • 1,850 docking stations by 2050	2050
<b>General e-mobility</b>			
Low Emission Development Strategy (LEDS) - Surface Transport	2021	100% taxi imports to be EVs by 2035	2035
Low Emission Development Strategy (LEDS) - Surface Transport	2021	100% light vehicles and buses imports to be EVs by 2045	2045
Low Emission Development Strategy (LEDS) - Surface Transport	2021	25% heavy vehicles (freight) imports to be EVs by 2050	2050
The Alternative Renewable Energy Policy 2013	2013	20% of the state owned and 10% of the private vehicle fleet shall be encouraged to run on clean and green fuels by 2025	2025

### XIII. Indirect Transport Climate Change Targets

This table shows non-GHG targets as specified in the policy documents in Bhutan which indirectly benefit climate change mitigation and adaptation in the transport sector

Document	Year published	Target	Target year
<b>General infrastructure improvements</b>			
12th Five Year Plan 2018-23	2019	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 requirements=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 implementation for safety improved to ICAO minimum standard = 40% (50% - 2016) Lack of effective implementation for security improved = 45% (63.78% - 2009)	2023
<b>General land use</b>			
Low Emission Development Strategy (LEDS) - Surface Transport	2021	• Establish minimum 1 neighbourhood node with basic amenities and facilities close to growing cities - Thimphu, Paro, Phuentsholing, and Samtse	2050
<b>General parking measures</b>			
Low Emission Development Strategy (LEDS) - Surface Transport	2021	• 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
<b>General public transport</b>			
12th Five Year Plan 2018-23	2019	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
Low Emission Development Strategy (LEDS) - Surface Transport	2021	• 314 intra-city and 358 intercity 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
<b>General rail improvement</b>			
Low Emission Development Strategy (LEDS) - Surface Transport	2021	13 passenger trains on 120 km route	2050
<b>Hydrogen</b>			
Low Emission Development Strategy (LEDS) - Surface Transport	2021	Hydrogen pilot (Fuel cell based and Combustion based) with Light, Medium and Heavy vehicles	2050
<b>Measures to increase car occupancy</b>			
Low Emission Development Strategy (LEDS) - Surface Transport	2021	Improve vehicle occupancy in light vehicles and taxis by 50% and 25% respectively by 2035	2035

### XIII. Indirect Transport Climate Change Targets

This table shows non-GHG targets as specified in the policy documents in Bhutan which indirectly benefit climate change mitigation and adaptation in the transport sector

Document	Year published	Target	Target year
<b>Target - Modal shift</b>			
Low Emission Development Strategy (LEDS) - Surface Transport	2021	• 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
<b>Target - Transport energy consumption</b>			
The Alternative Renewable Energy Policy 2013	2013	1000 kilolitres of oil equivalent substituted with 111,000MWh	2025
<b>Technology and knowledge transfer</b>			
Low Emission Development Strategy (LEDS) - Surface Transport	2021	100% of traffic signals in large urban areas should have smart CCTV systems by 2040	2040
<b>Urban passenger rail infrastructure improvement</b>			
Low Emission Development Strategy (LEDS) - Surface Transport	2021	2025 Prepare DPR and secure funding for the feasibility study for: • A) LRT on Thimphu – Paro route • B) Passenger train on Thimphu-Phuentsholing route	2025
Low Emission Development Strategy (LEDS) - Surface Transport	2021	2030 • Implement passenger trains on 97 km ThimphuPhuentsholing route • Implement LRT between Thimphu-Chuzom-Paro	2030
<b>Vehicle efficiency standards</b>			
Low Emission Development Strategy (LEDS) - Surface Transport	2021	Implement BS-VII/ Euro VII by 2026	2026

**XIV. Transport and Climate Policy Measures**

This table lists the policy measures that relate to climate change mitigation and adaptation in the transport sector that had been identified in the transport policy documents of Bhutan

Document	Year published	Measure	Road	Rail	Domestic Navigation	Domestic Aviation	Urban Transport
<b>Active transport infrastructure expansion</b>							
<b>Second Nationally Determined Contribution - BTN</b>	<b>2021</b>	<b>Non-motorized transport system through public bicycle systems and improved sidewalks, crosswalks</b>	X				
Bhutan. National communication (NC). NC 3.	2021	Identification of no car zone - cycle lanes in place and efficient public transport	X				
Low Emission Development Strategy (LEDS) - Surface Transport	2021	Planning of pedestrian path and cycling lanes as independent networks and integrated road system	X				X
National Transport Policy 2017 - Policy Protocol Report	2017	construction of bicycle lanes and pedestrian walkways in Thimphu and Pheuntsholing	X				X
The Alternative Renewable Energy Policy 2013	2013	Bike-lanes shall be introduced in cities and towns, where feasible, to encourage biking/cycling and walking.	X				
<b>BRT</b>							
<b>Second Nationally Determined Contribution - BTN</b>	<b>2021</b>	<b>Mass transit through improvements in bus systems and the introduction of open-bus rapid transit (BRT) network (electric and diesel) and light rail transit.</b>	X				X
12th Five Year Plan 2018-23	2019	Sustainable Public Transport Services (BRT & complementary infrastructure)	X				X
National Transport Policy 2017 - Policy Protocol Report	2017	The proposed BRTS in Thimphu can be implemented with the application of ITS to enhance the effectiveness of the proposed mass transit system. a) PPP in Thimphu BRT to be pursued b) Utilizing Green Climate Funds for development of BRT civil works combined with the NMT elements as well as for procurement of low emission buses for Thimphu.	X				X
<b>Development of climate change/ low carbon plan/ policy</b>							
<b>Second Nationally Determined Contribution - BTN</b>	<b>2021</b>	<b>Bhutan has started work towards preparing the Long Term Low GHG Emission and Climate Resilient Development Strategy (LTS).</b>					

## XIV. Transport and Climate Policy Measures

This table lists the policy measures that relate to climate change mitigation and adaptation in the transport sector that had been identified in the transport policy documents of Bhutan

Document	Year published	Measure	Road	Rail	Domestic Navigation	Domestic Aviation	Urban Transport
Second Nationally Determined Contribution - BTN	2021	Climate change has been integrated into our development planning with “Climate Neutrality, Climate and Disaster Resilience” identified as the sixth National Key Result Area (NKRA) of the 12th Five Year Plan (2018-2023). The Climate Change Policy of the Kingdom of Bhutan 2020 was adopted with a vision for “a prosperous, resilient and carbon neutral Bhutan where the pursuit of gross national happiness for the present and future generations is secure under a changing climate.” To implement the priority programs in the NDC, several Low Emission Development Strategies (LEDS) were developed to prioritise mitigation actions in key sectors of Agriculture, Human Settlement, Industry and Transport. A study on Gender and Climate Change in Bhutan with a focus on three NDC sectors of Agriculture, Energy and Waste was undertaken to unpack the gender climate nexus, gender roles and gender differentiated impacts of climate change. Three NAMAs were developed in 2016 for Road Transport, Housing (residential and institutional) and Municipal Solid Waste Management.	x				
12th Five Year Plan 2018-23	2019	Master plan for low emissions transport					
Bhutan Electric Vehicle Initiative	2014	The Royal Government of Bhutan (RGoB) intends to formulate and implement a National Action Plan for Zero Emission country					
Bhutan. National communication (NC). NC 3.	2021	The National Strategy and Action Plan for Low Carbon Development was prepared to enable Bhutan to fulfill its commitment of remaining carbon neutral.					
High Ambition Coalition COP 26 Leaders’ Statement	2021	Support ambitious policies to reduce emissions in transport sectors, including to take more ambitious climate action in shipping and aviation.					
National Gender Equality Policy	2020	Mainstream gender in all disaster and climate change related initiatives by acknowledging the differential impacts of disasters and climate change on women and men, and highlight the positive roles women can play in adaptation and mitigation efforts.					
Voluntary National Review 2021 - BTN	2021	Similarly, revision of the LEDS for the Transport Sector (LEDS-Transport) 2017 will include developments and updates of the transport sector since 2016, including national vehicle emission standards and ongoing projects for mass transport and electric cars.	x				
<b>Development of e-mobility transport plan/policy</b>							
Second Nationally Determined Contribution - BTN	2021	The Bhutan Electric Vehicle (EV) Roadmap (2020-2025) has also been developed for a transition to zero emission mobility with targets for 2035, 2045 and 2050.	x				
<b>Development of national development plan/ policy</b>							



### XIV. Transport and Climate Policy Measures

This table lists the policy measures that relate to climate change mitigation and adaptation in the transport sector that had been identified in the transport policy documents of Bhutan

Document	Year published	Measure	Road	Rail	Domestic Navigation	Domestic Aviation	Urban Transport
<b>Second Nationally Determined Contribution - BTN</b>	<b>2021</b>	<b>Bhutan’s 21st Century Economic Roadmap is being drafted as a national initiative to chart out Bhutan’s long-term economic direction and to guide short and medium-term plans, programs, and policies</b>					
Bhutan. National communication (NC). NC 3.	2021	The economic development policy (EDP), which has a total of 252 policy provisions, provides the overall enabling environment to continue creating a transparent and conducive environment for business and investment in the Bhutanese economy.					
<b>Development of national energy plan/ policy</b>							
<b>Second Nationally Determined Contribution - BTN</b>	<b>2021</b>	<b>The National Energy Efficiency &amp; Conservation Policy, and the Energy Efficiency Roadmap 2030 covering the sectors of buildings, transport and industry were launched in 2019. The Renewable Energy Master Plan (2017-2032) was adopted as a strategy for the long-term implementation of renewable energy technologies. The Sustainable Hydropower Development Policy (SHDP) 2021 enhances the previous hydropower policy by integrating climate resilience and mitigation among other updates. As current run-of-river hydropower schemes in Bhutan have become increasingly vulnerable to decreasing water flows in the dry season the SHDP emphasises adaptation measures such as reservoir/pumped storage schemes. In addition, the new policy mandates hydropower value chain through ventures in energy storage technologies such as hydrogen fuel, green ammonia, and other emerging technologies. These energy storage and diversification measures for adaptation also contribute directly to Bhutan’s carbon neutral efforts by providing clean energy for zero carbon transport and mobility.</b>					
The Alternative Renewable Energy Policy 2013	2013	Develop RE Master Plan for each of the RE technologies by mapping capacity, generation potential and cost of generation by location across the Kingdom					
<b>Development of transport adaptation/ emergency/ disaster plan/ policy</b>							
<b>First Nationally Determined Contribution - BTN</b>	<b>2015</b>	<b>For the medium to long term, Bhutan views the process to formulate and implement National Adaptation Plans (NAPs) as an important means towards reducing vulnerability by both integrating climate change adaptation into national development planning and also implementing priority adaptation actions on the ground. Bhutan will be fully engaged in the NAP process and begin the formulation of the first NAP once support is received.</b>					
<b>First Nationally Determined Contribution - BTN</b>	<b>2015</b>	<b>Bhutan prepared its National Adaptation Program of Action (NAPA) in 2006 and also updated the project profiles (2012) and is now implementing few of the priority actions identified as urgent and immediate needs.</b>					
<b>Disaster notification/ early warning system</b>							

XIV. Transport and Climate Policy Measures

This table lists the policy measures that relate to climate change mitigation and adaptation in the transport sector that had been identified in the transport policy documents of Bhutan

Document	Year published	Measure	Road	Rail	Domestic Navigation	Domestic Aviation	Urban Transport
<b>First Nationally Determined Contribution - BTN</b>	<b>2015</b>	<b>Improved monitoring and detection of hydromet extremes using remote sensing and satellite-based technologies and approaches Strengthening integrated risk monitoring and early warning systems and response for climate sensitive diseases</b>					
Bhutan National Adaptation Programme of Action	2008	Explore early warning technologies for occurrence of landslide					
Bhutan. National communication (NC). NC 3.	2021	Strengthen integrated risk monitoring and early warning systems and response for climate sensitive diseases.					
National Environment Strategy (2020)	2020	a network of real-time automated weather monitoring and forecasting stations is being established. This will feed into a system for disseminating extreme weather warnings, especially flash flood, glacial lake outburst flooding (GLOF) and landslide risks					
<b>General capacity building</b>							
<b>First Nationally Determined Contribution - BTN</b>	<b>2015</b>	<b>Improving efficiency and emissions from existing vehicles through standards and capacity building</b>	x				
12th Five Year Plan 2018-23	2019	Mandatory training, procurement of equipment for regional offices Strengthening of Capacity for Vehicle Emission Testing and Road Safety Monitoring Building Technical Capacity of DoAT Staff to meet requirements of International Civil Aviation Organization and National Regulations to enhance Safety and Security through certification					
Bhutan transport 2040 Integrated strategic Vision	2013	strengthening the traffic police establishing a national traffic police and provide technical resources and training					
Bhutan. National communication (NC). NC 3.	2021	Improving efficiency and emissions from existing vehicles through standards and capacity building Promote R&D and capacity development Research and capacity building for the implementation of energy efficient public transport system.	x				
National Gender Equality Policy	2020	The government shall provide adequate financial and human resource to achieve gender equality in the country The government shall endeavour to invest in building specialised capacities for gender-related issues for all the government and non-government stakeholders to ensure effective realisation of the policy objectives.					
National Transport Policy 2017 - Policy Protocol Report	2017	Im prove human res ources and capacity in DO R and R S T A Im prove human res ources, capacity and equipm ent Post crash response - Improve human resources and equipment Strengthening the traffic police					
Road Sector Master Plan (2007-2027)	2007	HR development to promote specialization in some special areas within the road sector	x				
Technology Action Plan Report	n.d.	Institutional strengthening of the Engineering Division of DoA/MoAF and Dzongkhag Engineering Sectors Development of technical know-how and skills among various people who will have a role in the planning, design and construction of climate-resilient farm roads.	x				

**General e-mobility**

## XIV. Transport and Climate Policy Measures

This table lists the policy measures that relate to climate change mitigation and adaptation in the transport sector that had been identified in the transport policy documents of Bhutan

Document	Year published	Measure	Road	Rail	Domestic Navigation	Domestic Aviation	Urban Transport
First Nationally Determined Contribution - BTN	2015	Promoting non-motorized transport and non-fossil fuel powered transport such as electric and fuel cell vehicles	x				
Second Nationally Determined Contribution - BTN	2021	Promotion of electric passenger vehicles (taxi, two wheelers, light vehicles, buses)	x				
12th Five Year Plan 2018-23	2019	Bhutan Sustainable Low Emission Transport Systems 1. Policy support for low-emission transport 2. Awareness and capacity development 3. Investment in low-emission transport systems and support service					
Bhutan Electric Vehicle Initiative	2014	Launch Different EVs To promote EV fleet programs for government, public & private sector	x				
Bhutan. National communication (NC). NC 3.	2021	Promoting non-motorized transport and non-fossil fuel-powered transport such as electric and fuel cell vehicles Promote electric vehicle.	x				
Economic Development Policy (2016)	2016	The Royal Government shall promote the use of hybrid and electric vehicles through suitable policy interventions.	x				
Energy transition pathways for the 2030 ESCAP agenda : SDG 7 roadmap for Bhutan	2022	SDG Scenario: Increase the share of electric passenger cars to 40 per cent by 2030 Increase the share of electric taxis to 50 per cent by 2030 Increase the share of electric buses to 50 per cent by 2030 Increase the share of electric freight trucks to 20 per cent by 2030 Increase the share of electric mini buses to 50 per cent by 2030 Increase the share of electric motorbikes to 40 per cent by 2030	x				
Low Emission Development Strategy (LEDS) - Surface Transport	2021	Introduce low emission freight trucks including EV trucks Prioritize the transition of government vehicles (pool vehicles), taxis, commercial vehicles (passenger and freight) to low-emissions technology in close consultation with relevant stakeholders including taxi, bus and freight operators	x				
National Energy Efficiency & Conservation Policy of Bhutan (Nov 2019)	2019	Promotion of energy efficient transportation shall include mass transportation systems, electric and hybrid vehicles and non-motorized transportation like walking and cycling	x				
National Environment Strategy (2020)	2020	promotion of electric vehicles					
National Transport Policy 2017 - Policy Protocol Report	2017	Mandate government agencies to purchase hybrid, alternative fuel, or efficient vehicles for agency fleets	x				
The Alternative Renewable Energy Policy 2013	2013	Research and development activities shall be undertaken to explore substitution of fossil fuels by green energy transport fuel sources such as electricity and bio-fuels, and technologies such as electric, hybrid electric vehicles, and other emerging technologies. Research and Development shall be carried out to introduce a more comprehensive and reliable mass transport system, where feasible, including electric tram networks, electric and hybrid electric buses and other clean mass transport options.	x				
Voluntary National Review 2021 - BTN	2021	Bhutan Sustainable Low-Emission Urban Transport Systems project under implementation, to replace 300 Internal Combustion Engine Taxis with Electric Vehicles by the end of June 2022; and installation of charging stations	x				x

**XIV. Transport and Climate Policy Measures**

This table lists the policy measures that relate to climate change mitigation and adaptation in the transport sector that had been identified in the transport policy documents of Bhutan

Document	Year published	Measure	Road	Rail	Domestic Navigation	Domestic Aviation	Urban Transport
<b>General freight and logistics improvements</b>							
<b>First Nationally Determined Contribution - BTN</b>	<b>2015</b>	<b>Improving efficiency in freight transport</b>					
Bhutan. National communication (NC). NC 3.	2021	Improving efficiency in freight transport Expand use of more efficient and effective modes of cargo movement.					
Low Emission Development Strategy (LEDS) - Surface Transport	2021	<ul style="list-style-type: none"> <li>Develop a city level freight delivery strategy including an analysis of freight movements and options for consolidation and low impact distribution</li> <li>Plan and implement more efficient and less intrusive freight delivery options, especially for intra-city delivery of merchandize and goods.</li> </ul>					X
<b>General infrastructure improvements</b>							
<b>Second Nationally Determined Contribution - BTN</b>	<b>2021</b>	<b>Efficient street lighting</b>	X				
Bhutan transport 2040 Integrated strategic Vision	2013	alignment improvements to reduce travel times and enhance safety introduction of improved engineering and construction technology to reduce overall life cycle costs and provide better pavement quality provision of safety enhancements	X				
Bhutan. National communication (NC). NC 3.	2021	Efficient infrastructure development for transportation	X				
National Gender Equality Policy	2020	Improve gender-friendly infrastructure and facilities in rural areas.	X				
National Transport Policy 2017 - Policy Protocol Report	2017	provision of safety enhancements Improving road design standards Improve highway, street, and intersection design standards that foster smooth flow of traffic.	X				
<b>General public transport</b>							
<b>First Nationally Determined Contribution - BTN</b>	<b>2015</b>	<b>Improving mass transit and demand side management of personal modes of transport Exploring alternative modes of transport to road transport such as rail, water and gravity ropeways</b>		X			
<b>Second Nationally Determined Contribution - BTN</b>	<b>2021</b>	<b>Mass transit though improvements in bus systems and the introduction of open-bus rapid transit (BRT) network (electric and diesel) and light rail transit.</b>	X				X
12th Five Year Plan 2018-23	2019	Public Transport: 1. Opening and strengthening of base offices in Panbang, Gasa, Lhamoyzingkha, Wamrong, Sibsoo, Gomtu, Jomotshangkha, Dorokha, Sarpang 2. Provide Government subsidy for non-profitable routes: 3 M (RGoB) 3. Revision and printing of Bus and Taxi Fares 4. Procurement of security equipment at all bus terminals (CCTV cameras)	X				X

### XIV. Transport and Climate Policy Measures

This table lists the policy measures that relate to climate change mitigation and adaptation in the transport sector that had been identified in the transport policy documents of Bhutan

Document	Year published	Measure	Road	Rail	Domestic Navigation	Domestic Aviation	Urban Transport
Bhutan transport 2040 Integrated strategic Vision	2013	Inter-dzongkhag bus services—size and condition of vehicles, including promotion of larger vehicles where and when road conditions permit; availability of luxury premium services; schedules and frequencies in coordination with operators; and regulation of fares for basic services construction of bus terminals and intercity taxi parking in all dzongkhag centers, including bus stops along the highways development of public transport, including identifying measures to boost ridership based on several options, both for the short- and long term;	x				x
Bhutan. National communication (NC). NC 3.	2021	Improve mass transit and develop financial products for promotion of private investment through concessions and Public Private Partnerships. Exploring alternative modes of transportation to road transport such as rail, water, and gravity ropeways.		x			x
Economic Development Policy (2016)	2016	Promote establishment of clean, safe, affordable and reliable mass transportation, starting with the major cities. Improved urban transport shall be through the introduction of efficient bus services or other mass transit systems and associated interventions to reduce congestion and vehicular emission Explore possibilities of introducing electric/hybrid public transport system in major urban centres by 2017 given their larger population base, economic activities as well as favourable topography. Private sector shall be encouraged to support the activity by developing an allied range of services Explore the establishment of rope ways or cable car network in ecologically sensitive and remote locations to improve access and minimize the impact from road construction	x				x
Low Emission Development Strategy (LEDS) - Surface Transport	2021	<ul style="list-style-type: none"> <li>Implement Passenger Information System (PIS) for all public buses and taxis</li> <li>Promote and provide eticketing services for all modes of transport (bus, taxis, etc.)</li> </ul> Cable cars and ropeways are important modes of transport in mountainous regions and therefore, must be promoted in a phased manner, and for which capacity development would assume priority					x
National Energy Efficiency & Conservation Policy of Bhutan (Nov 2019)	2019	Promotion of energy efficient transportation shall include mass transportation systems, electric and hybrid vehicles and non-motorized transportation like walking and cycling	x				x
National Environment Strategy (2020)	2020	better public transport introducing cleaner vehicles and fuel, through replacing private cars with public transport,	x				x

XIV. Transport and Climate Policy Measures

This table lists the policy measures that relate to climate change mitigation and adaptation in the transport sector that had been identified in the transport policy documents of Bhutan

Document	Year published	Measure	Road	Rail	Domestic Navigation	Domestic Aviation	Urban Transport
National Transport Policy 2017 - Policy Protocol Report	2017	Provide affordable and safe public transport services to all Dzongkhag centres Provide consumer a fair choice between alternatives modes of transport Provide subsidies on non-profitable bus routes development of public transport, including identifying measures to boost ridership based on several options, both for the short- and long term a) Designing an efficient, reliable, economical city bus service with requisite support infrastructure in place (buses, depots, terminals, staff, ITS applications, bus operators, regulations, maintenance facilities, emission standards etc) Bus route rationalization Reducing headways (from current 10-15 min to lower levels) Bus transport - Regulatory mechanism for private operators to operate. Develop stringent service level contracts. Investigate the potential for connections to the Indian rail network and the use of ropeways (aerial lifts) for specific commodity movements b) Continue with private sector for bus transport services but develop stringent service level contracts.	x				x
Voluntary National Review 2021 - BTN	2021	New public routes introduced with subsidies encouraging passenger transport services, to enhance mobility of people living in the most remote parts of the country	x				
<b>General shared mobility</b>							
Second Nationally Determined Contribution - BTN	2021	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.	x				
Bhutan transport 2040 Integrated strategic Vision	2013	Inter-dzongkhag taxi services—regulation of fares, identification of appropriate vehicle types, determination of fares on a seat per kilometer basis, and regulation of loading.	x				
Low Emission Development Strategy (LEDS) - Surface Transport	2021	Support piloting to validate new technology and evaluate performance and impacts.	x				
<b>General transport demand management</b>							
First Nationally Determined Contribution - BTN	2015	Improving mass transit and demand side management of personal modes of transport	x				x
12th Five Year Plan 2018-23	2019	Traffic congestion management	x				x
Bhutan transport 2040 Integrated strategic Vision	2013	revision of traffic circulation development of a package of regulatory measures	x				x
National Energy Efficiency & Conservation Policy of Bhutan (Nov 2019)	2019	shorten travel distances and avoid traffic congestion	x				x
National Transport Policy 2017 - Policy Protocol Report	2017	Adopt demand management programs. improvement of the traffic engineering and management system revision of traffic circulation	x				x
<b>Intelligent transport systems (ITS)</b>							



**XIV. Transport and Climate Policy Measures**

This table lists the policy measures that relate to climate change mitigation and adaptation in the transport sector that had been identified in the transport policy documents of Bhutan

Document	Year published	Measure	Road	Rail	Domestic Navigation	Domestic Aviation	Urban Transport
<b>First Nationally Determined Contribution - BTN</b>	<b>2015</b>	<b>Promoting use of appropriate intelligent transport systems</b>	x				
12th Five Year Plan 2018-23	2019	Green Transport Systems (ITS & BIS)					
Bhutan. National communication (NC). NC 3.	2021	Promoting the use of appropriate intelligent transport systems	x				
Low Emission Development Strategy (LEDS) - Surface Transport	2021	• Identify service delivery gaps related to headway, travel time, speed, comfort, parking, etc. • Identify ITS technology which can mitigate the gaps. • Prepare and implement ITS deployment and monitoring plan.	x				
National Transport Policy 2017 - Policy Protocol Report	2017	Implement intelligent transportation systems in order to minimise delay and idling. The proposed BRTS in Thimphu can be implemented with the application of ITS to enhance the effectiveness of the proposed mass transit system. 2. Strengthen and streamline women’s safety on the road. (by understanding women perception of security, comfort and convenience and by leveraging on ITS)	x				x
<b>Investment required for specific projects</b>							
<b>Second Nationally Determined Contribution - BTN</b>	<b>2021</b>	<b>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.</b>					
Bhutan. National communication (NC). NC 3.	2021	Bhutan Green Transport program 49.8 Million USD Enhancing Climate Resiliency of Road Network and its Assets 270 Million USD	x				
<b>Programs to reduce emissions in logistics</b>							
<b>Second Nationally Determined Contribution - BTN</b>	<b>2021</b>	<b>Low emission freight transport system for heavy and commercial trucks and freight trains</b>	x	x			
<b>Target - Net zero, carbon neutrality, and other long-term climate action</b>							
<b>First Nationally Determined Contribution - BTN</b>	<b>2015</b>	<b>Bhutan intends to remain carbon neutral where emission of greenhouse gases will not exceed carbon sequestration by our forests, which is estimated at 6.3 million tons of CO2.</b>					
The Climate Change Policy of the Kingdom of Bhutan 2020	2020	To provide strategic guidance to ensure that Bhutan remains carbon neutral and protects the wellbeing of the people of Bhutan by adapting to climate change in an efficient and effective manner					
<b>Traffic management</b>							
<b>Second Nationally Determined Contribution - BTN</b>	<b>2021</b>	<b>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.</b>	x				
<b>Transport infrastructure resilience</b>							

## XIV. Transport and Climate Policy Measures

This table lists the policy measures that relate to climate change mitigation and adaptation in the transport sector that had been identified in the transport policy documents of Bhutan

Document	Year published	Measure	Road	Rail	Domestic Navigation	Domestic Aviation	Urban Transport
<b>First Nationally Determined Contribution - BTN</b>	<b>2015</b>	<b>Climate proof transport infrastructure against landslides and flash floods, particularly for critical roads, bridges, tunnel and trails</b>	x				
Bhutan. National communication (NC). NC 3.	2021	Promote green and climate resilient infrastructures					
National Environment Strategy (2020)	2020	Strengthen the resilience of road, public infrastructure and human settlement from natural disaster enhancing disaster preparedness and response at national and local levels climate proofing transport infrastructure against landslides and flash flood planning the alignment of new roads carefully to avoid areas of ecological sensitivity, as well as cultural heritage sites; and minimizing the destabilization of slopes by: avoiding full cuts wherever possible, using excavators rather than bulldozers and limiting blasting or using controlled blasting techniques, adding log or boulder barriers to control excavated material rolling downhill during construction, managing water flow carefully, stabilizing slopes with retaining structures, and undertaking bio-engineering for revegetation with retained topsoil.	x				
Road Sector Master Plan (2007-2027)	2007	Consolidate existing highways and roads infrastructure to make them climate-resilient. Development of alternative new and consolidation of existing roads which will serve as alternative routes will be undertaken on priority basis	x				
Technology Action Plan Report	n.d.	Development of information and country evidences (cost-benefit analyses) to support the case for climate-resilient farm road development Sensitization, advocacy and awareness-building activities to support climate-resilient farm road development	x				
Voluntary National Review 2021 - BTN	2021	Improvement and climate proofing of 1500 kms of farm roads (under 1st phase) is underway in the districts	x				
<b>Urban passenger rail infrastructure improvement</b>							
<b>Second Nationally Determined Contribution - BTN</b>	<b>2021</b>	<b>Mass transit through improvements in bus systems and the introduction of open-bus rapid transit (BRT) network (electric and diesel) and light rail transit.</b>		x			x
The Alternative Renewable Energy Policy 2013	2013	Research and Development shall be carried out to introduce a more comprehensive and reliable mass transport system, where feasible, including electric tram networks, electric and hybrid electric buses and other clean mass transport options.		x			x
<b>Vehicle air pollution emission standards</b>							
<b>First Nationally Determined Contribution - BTN</b>	<b>2015</b>	<b>Improving efficiency and emissions from existing vehicles through standards and capacity building</b>	x				
Bhutan. National communication (NC). NC 3.	2021	Improving efficiency and emissions from existing vehicles through standards and capacity building	x				
National Environment Strategy (2020)	2020	All vehicles are required to undergo annual emission tests enforcing vehicle emissions standards	x				

## XIV. Transport and Climate Policy Measures

This table lists the policy measures that relate to climate change mitigation and adaptation in the transport sector that had been identified in the transport policy documents of Bhutan

Document	Year published	Measure	Road	Rail	Domestic Navigation	Domestic Aviation	Urban Transport
National Transport Policy 2017 - Policy Protocol Report	2017	Adopt international safety and emission standards	x				
<b>Vehicle efficiency standards</b>							
<b>First Nationally Determined Contribution - BTN</b>	<b>2015</b>	<b>Improving efficiency and emissions from existing vehicles through standards and capacity building</b>	<b>x</b>				
<b>Second Nationally Determined Contribution - BTN</b>	<b>2021</b>	<b>Improve fuel-efficiency in internal combustion engines through stringent vehicle and emission standards annual fuel cost saving of Nu.467 million with implementation of various EE measures in the transport sector.</b>	<b>x</b>				
Bhutan transport 2040 Integrated strategic Vision	2013	establishing modern testing facilities for roadworthiness or privatize roadworthiness testing, emissions, and fuel standards	x				
Bhutan. National communication (NC). NC 3.	2021	Improving efficiency and emissions from existing vehicles through standards and capacity building	x				
Low Emission Development Strategy (LEDS) - Surface Transport	2021	• Implement BS standards according to those adopted by India Enforce and monitor vehicle emissions standards	x				
National Energy Efficiency & Conservation Policy of Bhutan (Nov 2019)	2019	adopt appropriate measures to promote the penetration of fuel-efficient vehicles	x				
National Environment Strategy (2020)	2020	increase from the current Euro 2 emission standard to Euro 4, and eventually Euro 6, in line with India's standards.	x				
National Transport Policy 2017 - Policy Protocol Report	2017	Foster mandatory vehicle fuel efficiency or CO2 emission standards Establishing automotive industry agreements on fuel efficiency and adaptation of efficient and innovative vehicle technology Improve on-road fuel efficiency of vehicles by focusing on energy efficiency of nonengine components (generally not considered in official fuel efficiency tests), including tyres, cooling technologies, and lighting systems. Implement fuel efficiency standards for heavy duty vehicles.	x				
<b>Vehicle restrictions (import, age, access, sale, taxation)</b>							
<b>Second Nationally Determined Contribution - BTN</b>	<b>2021</b>	<b>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.</b>	<b>x</b>				
National Transport Policy 2017 - Policy Protocol Report	2017	Developing and enforcing standards on imported or used vehicles.	x				
National Transport Policy 2017 - Policy Protocol Report	2017	In troduce W hole Vehicle A pproval s tandard rules.	x				

### XIV. Transport and Climate Policy Measures

This table lists the policy measures that relate to climate change mitigation and adaptation in the transport sector that had been identified in the transport policy documents of Bhutan

Document	Year published	Measure	Road	Rail	Domestic Navigation	Domestic Aviation	Urban Transport
<b>Access restriction by corridor/ road</b>							
Bhutan. National communication (NC). NC 3.	2021	Identification of no car zone - cycle lanes in place and efficient public transport	X				
Low Emission Development Strategy (LEDS) - Surface Transport	2021	Consider implementing odd-even scheme. Establish suitable penalty regime for violators. Implement robust public-transit and non-motorized transport projects (including BRT, PBS, etc.) prior to imposition of oddeven schemes to provide citizens with feasible dignified alternatives for low-carbon transport.	X				X
National Transport Policy 2017 - Policy Protocol Report	2017	consideration of controls or restrictions on vehicle ownership and use in urban areas	X				X
<b>Adaptation-related education and training</b>							
Bhutan. National communication (NC). NC 3.	2021	Enhance preparedness and response to climate change induced disasters at the national and local levels.					
<b>Alternatively-powered rolling stock</b>							
National Transport Policy 2017 - Policy Protocol Report	2017	Support to manufacturers to develop vehicles that use alternative fuels.	X				
<b>Ban of ICE sales</b>							
Low Emission Development Strategy (LEDS) - Surface Transport	2021	gradual phase out of ICE vehicles	X				
<b>Biofuels</b>							
Bhutan. National communication (NC). NC 3.	2021	Promotion of biofuel by blending fossil fuel	X				
The Alternative Renewable Energy Policy 2013	2013	Research and development activities shall be undertaken to explore substitution of fossil fuels by green energy transport fuel sources such as electricity and bio-fuels, and technologies such as electric, hybrid electric vehicles, and other emerging technologies. Research and Development Activities to explore the potential for domestic production and use of bio-fuels (e.g. bio-ethanol and biodiesel) using organic matter will be undertaken, ensuring that such actions do not affect the food security of the Country.	X				
<b>Bus fleet renewal</b>							
Bhutan transport 2040 Integrated strategic Vision	2013	introduction of larger, more comfortable buses on major routes;	X				
National Transport Policy 2017 - Policy Protocol Report	2017	c) Fleet expansion to address the current gap and the replacement requirements. (significant proportion of the fleet is above 7 years of age)	X				
<b>Climate-resilient design standards</b>							

XIV. Transport and Climate Policy Measures

This table lists the policy measures that relate to climate change mitigation and adaptation in the transport sector that had been identified in the transport policy documents of Bhutan

Document	Year published	Measure	Road	Rail	Domestic Navigation	Domestic Aviation	Urban Transport
National Transport Policy 2017 - Policy Protocol Report	2017	Review construction standards and methods to ensure sustainability	x				
Voluntary National Review 2021 - BTN	2021	Guideline developed for design and construction of climate-resilient road infrastructure in 2019	x				
<b>Coordinate planning across government agencies</b>							
Low Emission Development Strategy (LEDS) - Surface Transport	2021	Close coordination between RSTA and Thromdes to provide easy pedestrian access to all public transport stops, stations, and interchange	x				x
National Environment Strategy (2020)	2020	An important action is conducting capacity development on environmentally friendly and climate smart construction with communities and Gewog officials.					
National Transport Policy 2017 - Policy Protocol Report	2017	there should be greater co-ordination between NLCS and other ministries/ departments involved in transport for facilitating development of an integrated transport and land use planning by providing geospatial information using tools such as GIS, GPS, Remote Sensing, etc.					
Technology Action Plan Report	n.d.	Strengthening inter-agency coordination and working linkages for farm road development	x				
The Alternative Renewable Energy Policy 2013	2013	Thromdes shall collaborate with NA/MoEA and provide policy and other support towards substitution of fossil fuel by green energy sources in urban transport, street lighting and district heating systems. MoIC shall collaborate with NA/MoEA and provide policy and other support towards substitution of fossil fuel by green energy sources in the transport sector.	x				x
<b>Define roles and accountabilities across agencies</b>							
Bhutan transport 2040 Integrated strategic Vision	2013	devolving enforcement of road rules to the traffic police, and the engineering aspects to the road agency	x				
National Transport Policy 2017 - Policy Protocol Report	2017	RAM - The model can be undertaken through a special purpose vehicle company (similar to South Africa's SANRAL) to give it more freedom in day to day management. Clarify the roles and responsibilities in regard of speed limit decision processes, record keeping, procurement, budget and ins tallation between R S T A , D O R , Police and o ther s takeholders. Improve Inciden t/Disas ter Manag em en t coordination Clear roles for reporting o f dead C larify roles and res pons ibilities for Inciden t/Disas ter Manag em en t coordination Plan for a m ax im um res ponse tim e and follow up E s tablis h Trauma C enter with defined roles and res pons ibilities E s tablis h clear-cu t roles and res pons ibilities for reporting o f deaths w ithin 30 day s to the Police Clear division of responsibilities for implementation and enforcement between the RSTA and Traffic Police Division devolving enforcement of road rules to the traffic police, and the engineering aspects to the road agency	x				
<b>Design standards for sidewalks and bicycle paths</b>							

### XIV. Transport and Climate Policy Measures

This table lists the policy measures that relate to climate change mitigation and adaptation in the transport sector that had been identified in the transport policy documents of Bhutan

Document	Year published	Measure	Road	Rail	Domestic Navigation	Domestic Aviation	Urban Transport
Global Status Report on Road Safety 2018	2018	Yes	x				
<b>Development density or intensiveness</b>							
Low Emission Development Strategy (LEDS) - Surface Transport	2021	Support development of neighborhoods with basic amenities and facilities to discourage habitants to avoid unnecessary trips.					x
<b>Development of active transport plan/ policy</b>							
Low Emission Development Strategy (LEDS) - Surface Transport	2021	Develop a pedestrian footpath and bicycle master plan for larger urban settlements. Both pedestrian and cycling tracks to be planned as an independent/dedicated network	x				x
<b>Development of aviation plan/policy</b>							
Voluntary National Review 2021 - BTN	2021	Development of an Aviation Policy and Surface Transport Policy to improve connectivity and mobility, and to ensure inclusiveness				x	
<b>Development of logistics plan/policy</b>							
Low Emission Development Strategy (LEDS) - Surface Transport	2021	Develop logistics policy					
<b>Development of other transport-related plan/ policy</b>							
Bhutan transport 2040 Integrated strategic Vision	2013	review and updating of the existing structure plan based on the revised population and vehicle ownership forecasts, including the preparation of an urban transport plan; conduct of a study on parking demand, establishment of a parking policy, and development of a package of regulatory measures					
Low Emission Development Strategy (LEDS) - Surface Transport	2021	Define shared mobility policy /guidelines. Review and revise guidelines periodically to accommodate new business model and support ecosystem. Provide and increase access to different public shared mobility solutions					
National Transport Policy 2017 - Policy Protocol Report	2017	review and updating of the existing structure plan based on the revised population and vehicle ownership forecasts, including the preparation of an urban transport plan establishment of a parking policy	x				x
<b>Development of road plan/ policy</b>							
Bhutan transport 2040 Integrated strategic Vision	2013	development of a DTMP (dzongkhag transport master plan) in each dzongkhag to provide the basis for planning and prioritizing network development;	x				x
National Transport Policy 2017 - Policy Protocol Report	2017	The rural road network strategy consists of creation of Dzongkhag Transport Master Plan (DTMP) for each Dzongkhag	x				



XIV. Transport and Climate Policy Measures

This table lists the policy measures that relate to climate change mitigation and adaptation in the transport sector that had been identified in the transport policy documents of Bhutan

Document	Year published	Measure	Road	Rail	Domestic Navigation	Domestic Aviation	Urban Transport
Technology Action Plan Report	n.d.	Climate-resilience mainstreaming in road development policies and guidelines Development of clear policy/ legal provisions with regards to compensation/ land substitution for private land acquisition for farm roads	x				
<b>Development of transport asset management plan/policy</b>							
National Transport Policy 2017 - Policy Protocol Report	2017	Bhutan also needs to institute a proper road asset management system. This will involve specifying asset performance indicators for each road class, developing a scientific assessment of present conditions and determine its priorities for maintenance interventions on rational basis.	x				
<b>Development of transport plan/ policy</b>							
Bhutan. National communication (NC). NC 3.	2021	The National Transport Policy of Bhutan covers policy objectives and a framework for institutional arrangements. It also introduces financing mechanisms and a framework for monitoring and evaluating the outcomes of this policy. As a result, it addresses many of the existing policy gaps for Bhutan’s transport sector. In particular, it provides the rationale and guiding principles for sub-sector policies. For example, it describes the existing landscape for important transport sub-sectors (roads and road transport; urban transport; civil aviation; regional connectivity) and details policy objectives. It also provides policy statements as benchmarks for meeting the objectives. Transport 2040: Integrated Strategic Vision The overall transport vision is to provide the entire population with a safe, reliable, affordable, convenient, cost effective, and environment-friendly transport system.	x	x		x	
Voluntary National Review 2021 - BTN	2021	Development of an Aviation Policy and Surface Transport Policy to improve connectivity and mobility, and to ensure inclusiveness					
<b>Disaster monitoring and risk assessment for transport infrastructure</b>							
12th Five Year Plan 2018-23	2019	Hazard Identification and Risk mitigation with proper audit and surveillance (SMS)					
National Environment Strategy (2020)	2020	a monitoring, assessment and warning system for flash floods and landslides					
<b>Employment in transport, communication, and storage</b>							
Low Emission Development Strategy (LEDS) - Surface Transport	2021	3. Promote entrepreneurship of women. Improve working conditions and guarantee better payment to them. Build women’s capacity to drive EV and give priority to female taxi drivers for subsidies on EV taxis.	x				x
<b>Energy efficient vehicle purchase incentives</b>							

## XIV. Transport and Climate Policy Measures

This table lists the policy measures that relate to climate change mitigation and adaptation in the transport sector that had been identified in the transport policy documents of Bhutan

Document	Year published	Measure	Road	Rail	Domestic Navigation	Domestic Aviation	Urban Transport
Bhutan transport 2040 Integrated strategic Vision	2013	introducing incentives for fuel-efficient and green vehicles in coordination with the Ministry of Finance and the Ministry of Economic Affairs introduction of incentive measures, including tax waivers for new environmentfriendly and fuel-efficient buses and taxis	x				
National Environment Strategy (2020)	2020	Actions include providing incentives for and reducing taxes on low-carbon vehicles.	x				x
National Transport Policy 2017 - Policy Protocol Report	2017	Subsidies for purchasing alternative fuel vehicles or for converting traditional fuel vehicles to alternative fuel vehicles. introducing incentives for fuel-efficient and green vehicles in coordination with the Ministry of Finance and the Ministry of Economic Affairs	x				
National Transport Policy 2017 - Policy Protocol Report	2017	Introduce tax incentives for new large trucks that are fuel efficient and comply with stringent emission standards	x				
<b>EV charging infrastructure</b>							
12th Five Year Plan 2018-23	2019	Installation of Quick charging stations	x				x
Bhutan Electric Vehicle Initiative	2014	To develop a network of nationwide quick charging infrastructure	x				
The Alternative Renewable Energy Policy 2013	2013	In coordination with relevant Ministries and Departments, necessary infrastructure to support the use of electricity as a source of fuel supply in the transport sector will be examined.	x				
Voluntary National Review 2021 - BTN	2021	Bhutan Sustainable Low-Emission Urban Transport Systems project under implementation, installation of charging stations	x				x
<b>EV manufacturing</b>							
Bhutan Electric Vehicle Initiative	2014	Explore establishing local conversion, assemble and manufacturing of EVs	x				
<b>Express lanes/ public transport priority</b>							
Low Emission Development Strategy (LEDS) - Surface Transport	2021	Establish and enforce carpool lanes along major highways and main city streets	x				x
<b>Financial instruments to support decarbonisation</b>							
Bhutan transport 2040 Integrated strategic Vision	2013	alternative performance-based subsidy scheme for unprofitable routes	x				
Economic Development Policy (2016)	2016	In areas where public transport is un-economical due to low volume of passenger flow, the Royal Government shall provide targeted subsidies to operators in remote areas.	x				
<b>Fiscal incentives for EVs and components</b>							
Bhutan Electric Vehicle Initiative	2014	To implement tax incentives, subsidies and carbon credit scheme to promote EVs	x				

### XIV. Transport and Climate Policy Measures

This table lists the policy measures that relate to climate change mitigation and adaptation in the transport sector that had been identified in the transport policy documents of Bhutan

Document	Year published	Measure	Road	Rail	Domestic Navigation	Domestic Aviation	Urban Transport
Bhutan. National communication (NC). NC 3.	2021	Improve access/purchase of electric vehicles by reviewing tax systems on electric/hybrid cars. Solar energy subsidies and electric vehicle subsidies	x				
Low Emission Development Strategy (LEDS) - Surface Transport	2021	Support electric vehicles by allocating annual budget for EVs. This budget to be utilized to support purchase incentive, installation of charging infrastructure and public awareness campaigns.	x				
National Transport Policy 2017 - Policy Protocol Report	2017	subsidies on electric vehicles	x				
The Alternative Renewable Energy Policy 2013	2013	Policies that promote the purchase and use of electric and hybrid electric vehicles will be explored, including but not limited to vehicle purchase incentives, dedicated priority parking, and other priority access policies.	x				
<b>Fossil fuel subsidy elimination</b>							
High Ambition Coalition COP 26 Leaders' Statement	2021	Halt inefficient fossil fuel subsidies as soon as possible.					
The Alternative Renewable Energy Policy 2013	2013	The Government shall gradually phase out subsidy on fossil fuels to encourage conservation and switch to alternative fuel sources.	x				
<b>Freight consolidation</b>							
Economic Development Policy (2016)	2016	Develop inland container depots or dry ports including railway links together with supporting facilities such as customs, immigration, quarantine etc. at the border crossings					
Low Emission Development Strategy (LEDS) - Surface Transport	2021	• Develop a city level freight delivery strategy including an analysis of freight movements and options for consolidation and low impact distribution					x
Voluntary National Review 2021 - BTN	2021	Trade logistics infrastructures such as dry ports and warehouses being developed in Pasakha, Gelephu and Nanglam jurisdictions bordering India; as well as one cold storage	x				
<b>Fuel quality</b>							
National Transport Policy 2017 - Policy Protocol Report	2017	Support for research and development into existing fuel enhancement and new fuel technologies.	x				
<b>General active mobility</b>							
Bhutan transport 2040 Integrated strategic Vision	2013	improvement of facilities for pedestrians, including a safe and secure network of routes and priorities within the central area	x				x
Bhutan. National communication (NC). NC 3.	2021	Promoting non-motorized transport and non-fossil fuel-powered transport such as electric and fuel cell vehicles	x				
National Energy Efficiency & Conservation Policy of Bhutan (Nov 2019)	2019	Promotion of energy efficient transportation shall include mass transportation systems, electric and hybrid vehicles and non-motorized transportation like walking and cycling	x				x

XIV. Transport and Climate Policy Measures

This table lists the policy measures that relate to climate change mitigation and adaptation in the transport sector that had been identified in the transport policy documents of Bhutan

Document	Year published	Measure	Road	Rail	Domestic Navigation	Domestic Aviation	Urban Transport
National Transport Policy 2017 - Policy Protocol Report	2017	improvement of facilities for pedestrians, including a safe and secure network of routes and priorities within the central area	x				x
<b>General alternative fuels</b>							
National Energy Efficiency & Conservation Policy of Bhutan (Nov 2019)	2019	periodically commission technical studies and research activities for applicability of alternative fuels in vehicles, including hybrid and electric, and other emerging energy efficient vehicle technologies in the Country.	x				
National Strategy and Action Plan for Low Carbon Development, 2012	2012	Renewable Energy scenario, 2040: - Heavy duty – 5% electricity, 10% biodiesel, (85% diesel); - Light duty – 50% electricity, 10% biodiesel, (30% diesel, 10% gasoline); - Motorised two wheelers – 50% electricity, (50% gasoline).	x				
<b>General aviation improvements</b>							
Bhutan transport 2040 Integrated strategic Vision	2013	<ul style="list-style-type: none"> <li>• expansion of international links with other Asian hubs and regional centers;</li> <li>• provision of air carrier services and airport facilities sufficient for growth targets;</li> <li>• availability of domestic scheduled services linking main population centers;</li> <li>• construction of airstrips in remote areas for short take-off and landing and helicopter services;</li> <li>• provision of helicopter services for search and rescue, emergencies, and charter services;</li> <li>• private sector participation in services and facilities; and</li> <li>• effective regulation and compliance with international safety and environmental standards</li> </ul>				x	
<b>General data repositories and data collection</b>							
Low Emission Development Strategy (LEDS) - Surface Transport	2021	Make the transport data publicly available in an open data basis to encourage research, innovation and applications (apps) in its use and interpretation.	x			x	
National Environment Strategy (2020)	2020	A database for road slope failure along PNH1 (Thimphu-Trashigang) and PNH4 (Gelephu-Trongsas) has been developed and a key action is to update the existing hazard zonation of the entire road network, through a Geo-Hazard Risk Assessment and Resilient Asset Management plan	x				
National Gender Equality Policy	2020	The government shall ensure and strengthen the collection and analysis of data disaggregated by sex, age and disabilities for evidence-based interventions to address gender equality issues. This shall be further supported by the development of gender indicators and by addressing data gaps.	x			x	
National Transport Policy 2017 - Policy Protocol Report	2017	Make the vehicle registration data base system accessible to all. Implement a centralized joint data base system for vehicle registration, driver license, insurance, roadworthiness inspections, tax, etc. and make it accessible to the relevant authorities. Implement a Car Crash Data Management System National driving license register	x				
<b>General education and behavior change</b>							
Bhutan transport 2040 Integrated strategic Vision	2013	improving driver training undertaking a safety retrofit program	x				

### XIV. Transport and Climate Policy Measures

This table lists the policy measures that relate to climate change mitigation and adaptation in the transport sector that had been identified in the transport policy documents of Bhutan

Document	Year published	Measure	Road	Rail	Domestic Navigation	Domestic Aviation	Urban Transport
Low Emission Development Strategy (LEDS) - Surface Transport	2021	Corporate bicycle program- Cycling to work should be encouraged to incentivize use of NMT 4. Information and expertise in the areas of gender and transport is limited. There is a need for gender training, and for collection and use of gender-disaggregated data and gender analysis in transport policies Government and other public officials, conspicuously using e-bicycle and walking for short commuting trips	x				x
National Transport Policy 2017 - Policy Protocol Report	2017	Develop and introduce school education system for road safety in the school curriculum Public outreach and awareness programs: o Provision of information to car purchasers on vehicle performance, e.g. fuel consumption labelling on vehicles, including fuel consumption data in vehicle advertisements. o Standards/labelling requirements for non-engine components, such as tyres, cooling units and lighting, etc., which have an impact on fuel consumption. o Communicating the range of operational efficiency of vehicles and its monetary significance to consumers/drivers, such as in-car feedback instruments for ecodriving. o Heavy vehicle environmental rating scheme improving the road code and drivers' training Addressed the capacity gap through conducting workshops, providing technical assistance and designing programs on the lines of "training the trainers"	x				
<b>General IPT/ paratransit measures</b>							
Low Emission Development Strategy (LEDS) - Surface Transport	2021	Work with the taxi industry, mobility groups and other stakeholders to review the locations and availability of taxi parking zones and to understand better the role that taxis play in major cities of Bhutan.	x				x
<b>General land use</b>							
Low Emission Development Strategy (LEDS) - Surface Transport	2021	• Land use planning to develop land use controls to ensure urban renewal near Freight Terminal is compatible with the terminal's operations.					x
National Transport Policy 2017 - Policy Protocol Report	2017	Improve and enforce land-use planning regulations for road accesses to the highways and urban streets Integrated land use and transport planning in major urban centres					x
<b>General parking measures</b>							
Low Emission Development Strategy (LEDS) - Surface Transport	2021	Develop and review onstreet parking policy Implement parking degrowth plan and freeze parking facilities in densely populated commercial areas, near public spaces, schools etc. Limit the number of car parking spaces available in public and commercial areas of cities for singleoccupancy cars	x				x
National Transport Policy 2017 - Policy Protocol Report	2017	conduct of a study on parking demand, development of a package of regulatory measures make provisions in the appropriate legislation to prevent the use of right of way on road systems for parking purposes Parking management Limiting the number of car parking spaces available in public and commercial areas of cities and freezing all efforts to increase these capacities	x				x

### XIV. Transport and Climate Policy Measures

This table lists the policy measures that relate to climate change mitigation and adaptation in the transport sector that had been identified in the transport policy documents of Bhutan

Document	Year published	Measure	Road	Rail	Domestic Navigation	Domestic Aviation	Urban Transport
<b>General transport asset management</b>							
Bhutan transport 2040 Integrated strategic Vision	2013	progressive upgrading of all dzongkhag roads to all-weather (sealed) standards to be prioritized based on traffic demand implementing enforcement programs for roadworthiness	x				
National Environment Strategy (2020)	2020	In stretches of road that have been damaged by flash floods, erosion and landslides, repairs have been done using new techniques.	x				
National Transport Policy 2017 - Policy Protocol Report	2017	improving accessibility should not be seen with an outlook of one time investment but from an asset life cycle perspective and thus adequate attention should be paid towards identifying ways and means through which such roads will be maintained. progressive upgradation of all dzongkhag roads to all weather roads based on traffic demand It also recommends to contract all road maintenance to private sector over long run.	x				
Road Sector Master Plan (2007-2027)	2007	Develop road asset management system to enable efficient highway operation and maintenance, thus creating value for money various Quality Assurance measures shall be developed and continuously reviewed in order to promote quality construction works. These may be gradually inculcated in our general construction norms through procurement policies, Standard bidding documents, Technical Standards and Specifications etc	x				
Technology Action Plan Report	n.d.	Streamlining environmental assessment and environmental clearance procedures at the dzongkhag level so that the risk of 'conflict of interests' is eliminated	x				
<b>General transport finance</b>							
Road Sector Master Plan (2007-2027)	2007	Establishing a Road Development Fund	x				
Technology Action Plan Report	n.d.	Rationalization of the budget for farm road development in accordance with the technical standards for climate-resilience	x				
<b>General transport institutional reform</b>							



XIV. Transport and Climate Policy Measures

This table lists the policy measures that relate to climate change mitigation and adaptation in the transport sector that had been identified in the transport policy documents of Bhutan

Document	Year published	Measure	Road	Rail	Domestic Navigation	Domestic Aviation	Urban Transport
National Transport Policy 2017 - Policy Protocol Report	2017	establishing a national traffic police and provide technical resources and training Amongst all alternatives explored, the report recommends the following: o combine DOR and RSTA within a single ministry to ensure effective policy, planning and coordination in the road sub-sector as the most urgent requirement o create a Ministry of Transport to be responsible for the entire transport sector within a year of above integration o study the feasibility of devolving transport agencies into statutory authorities, SOEs and PPP concession agreements under the umbrella of the Ministry of Transport RCSC proposes to separate the service function by carving out a new department and naming it as “Department of Surface Transport” As a part of this strengthening exercise and to bring a greater focus for transport within MoIC, given it is large part of the ministry’s mandate, it is suggested to rename MoIC as Ministry of Transport & Communications. As a central planning body for transport, the mandate of MoIC should be extended for logistics planning as well.					
<b>General vehicle improvements</b>							
National Transport Policy 2017 - Policy Protocol Report	2017	Improving vehicle safety standards and testing Provide efficient, modern equipment and procedures for testing and enforcing vehicle roadworthiness, weights and dimensions and emission regulations	x				
<b>Intermodality measures</b>							
National Transport Policy 2017 - Policy Protocol Report	2017	build inter-modal transport facilities	x			x	
<b>Involvement of subnational government for transport activities</b>							
Low Emission Development Strategy (LEDS) - Surface Transport	2021	The central government to provide policy guidance and work closely with the local government (Thimphu Thromde in particular) on the planning and launching of the BRT project to ensure it is well integrated with the existing city and its future development potential while addressing traffic congestion by making the public transport system more attractive.	x				x
National Transport Policy 2017 - Policy Protocol Report	2017	With regards to road development, it propagates that main road network should remain under DoR and the other roads (Dzongkhag roads, Thromde roads, Farm roads) should be under Local Governments The local governments should be involved in planning, implementation and maintenance of roads under their domain. Thromdes should be responsible for public transport planning including service delivery planning.	x				
<b>Logistics hub</b>							
Low Emission Development Strategy (LEDS) - Surface Transport	2021	Develop integrated transport hubs and warehouses for efficient distribution of goods and last mile delivery of goods using light trucks	x				

## XIV. Transport and Climate Policy Measures

This table lists the policy measures that relate to climate change mitigation and adaptation in the transport sector that had been identified in the transport policy documents of Bhutan

Document	Year published	Measure	Road	Rail	Domestic Navigation	Domestic Aviation	Urban Transport
National Transport Policy 2017 - Policy Protocol Report	2017	a distribution and warehouse centre in Phuentsholing, which would combine clearing and logistics facilities and also act as a dry port, mainly for transit goods from third countries. build inter-modal transport facilities including warehouses, cold storage, and inland container depots and dry ports	x				
<b>Measures to improve rural-urban connectivity</b>							
Bhutan transport 2040 Integrated strategic Vision	2013	Local (rural) services within dzongkhags—introduction of minibus services in areas of low demand; identification of appropriate vehicle types; determination of fares on a per-passenger basis, based on road condition; and formation of local route associations.	x				
<b>National speed law</b>							
Global Status Report on Road Safety 2018	2018	Yes	x				
<b>Number of vehicle registration limit</b>							
Bhutan transport 2040 Integrated strategic Vision	2013	consideration of controls or restrictions on vehicle ownership and use in urban areas	x				x
Low Emission Development Strategy (LEDS) - Surface Transport	2021	Annual vehicle capping system	x				
<b>Passenger and freight load limits</b>							
Low Emission Development Strategy (LEDS) - Surface Transport	2021	Optimize freight vehicles loading, improve utilization, reduce vehicle kilometre travelled	x				
<b>Performance-based transport maintenance contracts</b>							
National Transport Policy 2017 - Policy Protocol Report	2017	Alternately, the government can give these roads on performance based maintenance contracts to private sector.	x				
<b>Public transit integration</b>							
Bhutan transport 2040 Integrated strategic Vision	2013	Terminal facilities—provision of appropriate terminal facilities in major centers for bus and taxi services in coordination with local authorities	x				
National Transport Policy 2017 - Policy Protocol Report	2017	terminal infrastructure for buses & taxis which would be developed in conjunction with the local community.	x				
<b>Railway electrification</b>							
Bhutan Electric Vehicle Initiative	2014	Study Feasibility of Introducing Electric Trains		x			
<b>Reference to finance mechanisms within country</b>							

XIV. Transport and Climate Policy Measures

This table lists the policy measures that relate to climate change mitigation and adaptation in the transport sector that had been identified in the transport policy documents of Bhutan

Document	Year published	Measure	Road	Rail	Domestic Navigation	Domestic Aviation	Urban Transport
Bhutan. National communication (NC). NC 3.	2021	Improve mass transit and develop financial products for promotion of private investment through concessions and Public Private Partnerships.					
National Transport Policy 2017 - Policy Protocol Report	2017	Innovative financing mechanisms - Commercial exploitation of resources Thromdes should be encouraged to explore other innovative sources of financing such as land value capture financing, congestion charges					
<b>Relocation from climate-risk areas</b>							
Bhutan National Adaptation Programme of Action	2008	Identification of potential areas for resettlement for vulnerable communities					
<b>Resilient transport technologies</b>							
National Environment Strategy (2020)	2020	More resilient construction techniques are needed for new roads and bridges, and when rebuilding after damage, and existing infrastructure can be reinforced in high risk areas.	x				
Technology Action Plan Report	n.d.	Pilot projects to demonstrate the full range of climate-resilient farm road development technology, covering construction of new farm roads as well as improvement of existing farm roads that lack climate-resilience;	x				
<b>Road charging and tolls</b>							
National Transport Policy 2017 - Policy Protocol Report	2017	RGOB can explore the commercial viability of structuring them on toll-operate-transfer (TOT) model for say a defined concession periods of 15-20 years.	x				
<b>Road infrastructure expansion</b>							
Economic Development Policy (2016)	2016	The difficulties of building multi lane highways make tunnelling the most viable option to reduce travel time as well as increase connectivity throughout the country. The development of the road sector especially tunnels shall be in sync with hydropower development	x				
National Transport Policy 2017 - Policy Protocol Report	2017	Add physical capacity by adding lanes, bypasses, or other improvements. widening of existing Eastern Western Highway (EWH) to 2 lanes with alignment improvements, completion of southern EWH, construction of new alignments and tunnels/ viaducts on key routes, improvement of access routes between industrial developments and major border crossings, improvement of engineering and construction technology and establish maintenance regime for all National Highways. Rationalization and prioritization of the network based on locally prepared DTMPs Establishment of criteria for farm road construction Construction of motorable bridges to ensure all weather accessibility.	x				
Road Sector Master Plan (2007-2027)	2007	a) Construct and complete the South East-West Highway up to PNH standard b) Construct new roads to provide inter-Dzongkhag connectivity Construct short tunnels where feasible	x				
<b>Road space repurpose to allow access for other modes</b>							

XIV. Transport and Climate Policy Measures

This table lists the policy measures that relate to climate change mitigation and adaptation in the transport sector that had been identified in the transport policy documents of Bhutan

Document	Year published	Measure	Road	Rail	Domestic Navigation	Domestic Aviation	Urban Transport
Bhutan transport 2040 Integrated strategic Vision	2013	better use of existing road space,	x				x
National Transport Policy 2017 - Policy Protocol Report	2017	better use of existing road space	x				x
<b>Road-side checks on overloading</b>							
Bhutan transport 2040 Integrated strategic Vision	2013	implementing enforcement programs for overloading	x				
National Transport Policy 2017 - Policy Protocol Report	2017	im prove and im plem en t s y s tem for con trol o f overloading regulating load for both passenger and freight implementing enforcement programs for overloading	x				
<b>Routine transport asset maintenance</b>							
Bhutan transport 2040 Integrated strategic Vision	2013	establishment of a maintenance regimen for all national highways and district roads to include pavement management systems and performance contracts establishment of a program for routine and periodic maintenance activities	x				
National Transport Policy 2017 - Policy Protocol Report	2017	establishment of a program for routine and periodic maintenance activities	x				
<b>Speed limit on motorways &lt;= 90 kph</b>							
Global Status Report on Road Safety 2018	2018	50 km/h	x				
<b>Speed limit on rural roads &lt;= 70 kph</b>							
Global Status Report on Road Safety 2018	2018	50 km/h	x				
<b>Speed limits on urban roads &lt;= 30 kph</b>							
Global Status Report on Road Safety 2018	2018	30 km/h	x				x
<b>Target - Economy-wide emissions</b>							
Bhutan. National communication (NC). NC 3.	2021	In the High Growth Scenario (HG), the emission of GHGs reaches the capacity of the sink (6.4 million tonnes CO2e) in 2041 and increases to 8.431 million tonnes CO2e by the year 2050. In the Low Growth Scenario (LG), the emission peaks to the sink capacity (6.4 million tonnes CO2e) between 2044 and 2046 and decreases to 6.258 million tonnes CO2e by 2050.					
Bhutan. National communication (NC). NC 3.	2021	In the High Growth Scenario (HG), the emission of GHGs reaches the capacity of the sink (6.4 million tonnes CO2e) in 2041 and increases to 8.431 million tonnes CO2e by the year 2050. In the Low Growth Scenario (LG), the emission peaks to the sink capacity (6.4 million tonnes CO2e) between 2044 and 2046 and decreases to 6.258 million tonnes CO2e by 2050.					

XIV. Transport and Climate Policy Measures

This table lists the policy measures that relate to climate change mitigation and adaptation in the transport sector that had been identified in the transport policy documents of Bhutan

Document	Year published	Measure	Road	Rail	Domestic Navigation	Domestic Aviation	Urban Transport
Bhutan. National communication (NC). NC 3.	2021	In the High Growth Scenario (HG), the emission of GHGs reaches the capacity of the sink (6.4 million tonnes CO2e) in 2041 and increases to 8.431 million tonnes CO2e by the year 2050. In the Low Growth Scenario (LG), the emission peaks to the sink capacity (6.4 million tonnes CO2e) between 2044 and 2046 and decreases to 6.258 million tonnes CO2e by 2050.					
<b>Target - Transport energy consumption</b>							
National Strategy and Action Plan for Low Carbon Development, 2012	2012	Energy Efficiency scenario: final energy consumption, 2040 Road Transport = 108658 toe (Baseline = 55094, 2005) International Aviation = 1992 toe (Baseline = 957, 2005) Domestic Aviation = 498 toe (Baseline = 957, 2005) EE + RE scenario: final energy consumption, 2040 Road Transport = 87156 toe (Baseline = 55094, 2005) International Aviation = 1992 toe (Baseline = 957, 2005) Domestic Aviation = 498 toe (Baseline = 957, 2005)	X			X	
<b>Target - Transport GHG emission</b>							
National Strategy and Action Plan for Low Carbon Development, 2012	2012	Energy Efficiency scenario: energy related CO2e emissions, 2040 Road Transport = 296399 t (Baseline = 176959, 2005) International Aviation = 6172 t (Baseline = 2905, 2005) Domestic Aviation = 1512 toe (Baseline = 0, 2005) Renewable Energy scenario: energy related CO2e emissions, 2040 Road Transport = 333706 t (Baseline = 176959, 2005) International Aviation = 6172 t (Baseline = 2905, 2005) Domestic Aviation = 1512 toe (Baseline = 0, 2005) EE + RE scenario: energy related CO2e emissions, 2040 Road Transport = 284268 t (Baseline = 176959, 2005) International Aviation = 6172 t (Baseline = 2905, 2005) Domestic Aviation = 1512 toe (Baseline = 0, 2005)	X			X	
<b>Technical standards for road infrastructure</b>							
Bhutan transport 2040 Integrated strategic Vision	2013	improving road design standards	X				
National Transport Policy 2017 - Policy Protocol Report	2017	Update Road Design Guidelines / Standards to cover road safety aspects adequately Develop/update the signage manual and develop guidelines for matching the speed limit with road function and road layout Install signage in general and especially speed limits where needed (enforcement) improving the road code and drivers' training For all forms of roads, the technical standards should be formulated by DoR.	X				
<b>Technologies on transport asset management</b>							
Bhutan transport 2040 Integrated strategic Vision	2013	continuing the development of information and technology systems in the Road Safety and Transport Authority and the traffic police	X				
<b>Technologies supporting post-crash response</b>							

**XIV. Transport and Climate Policy Measures**

This table lists the policy measures that relate to climate change mitigation and adaptation in the transport sector that had been identified in the transport policy documents of Bhutan

Document	Year published	Measure	Road	Rail	Domestic Navigation	Domestic Aviation	Urban Transport
National Transport Policy 2017 - Policy Protocol Report	2017	Rapid incident detection and clearance at low capacity highways.	x				
<b>Technology and knowledge transfer</b>							
12th Five Year Plan 2018-23	2019	Bhutan Green Transport Program (BRT) - Knowledge development and transfer	x				x
Bhutan transport 2040 Integrated strategic Vision	2013	establishing modern testing facilities for roadworthiness or privatize roadworthiness testing, emissions, and fuel standards					
National Transport Policy 2017 - Policy Protocol Report	2017	Support the establishment of management information system and global positioning system tracking; Aggressive support for adoption of green technology alternatives continuing the development of information and technology systems in RSTA and the traffic police	x				
<b>Transit-oriented development (TOD)</b>							
National Transport Policy 2017 - Policy Protocol Report	2017	promote transit oriented development over key transit corridors in urban centres of Bhutan especially in Thimphu.	x				x
<b>Transport asset condition assessment</b>							
Bhutan transport 2040 Integrated strategic Vision	2013	establishing modern testing facilities for roadworthiness or privatize roadworthiness testing, emissions, and fuel standards					
<b>Transport law</b>							
12th Five Year Plan 2018-23	2019	review and revise RSTA Act and regulation.	x				
Bhutan transport 2040 Integrated strategic Vision	2013	improving the road code amending the Road Safety and Transport Act and regularly updating regulations	x				
Low Emission Development Strategy (LEDS) - Surface Transport	2021	Advocate regulatory/legislative and policy changes to support new transport technology					
<b>Transport services adaptation</b>							
Economic Development Policy (2016)	2016	Multipurpose helicopter operations shall be introduced for search and rescue, medical evacuation, emergencies, disaster management, transportation of heavy machinery and non-scheduled services in places not served by fixed-wing aircraft operations				x	
<b>Vehicle import inspections</b>							
Road Safety Opportunities and Challenges: Low- and Middle-Income Country Profiles	2020	Yes	x				
<b>Vehicle inspection and maintenance</b>							

XIV. Transport and Climate Policy Measures

This table lists the policy measures that relate to climate change mitigation and adaptation in the transport sector that had been identified in the transport policy documents of Bhutan

Document	Year published	Measure	Road	Rail	Domestic Navigation	Domestic Aviation	Urban Transport
12th Five Year Plan 2018-23	2019	High way Inspection points, safety inspection vehicles, gears and uniform, awareness	x				
National Transport Policy 2017 - Policy Protocol Report	2017	Im prove the m andatory vehicle ins pection s y s tem and build adequately equipped ins pection s tations Im plem ent random vehicle ins pections and es tablsh a dedicated U nit in R S T A and/or in T raffic Police. Make drivers o f public trans port buses res ponsible for daily vehicle ins pections and es tablsh a s y s tem o f quality as s urance Enforcing operational efficiency of used vehicles through periodic inspection and maintenance programme. Mandatory vehicle emissions inspection, targeted primarily to local air quality	x				
Road Safety Opportunities and Challenges: Low-and Middle-Income Country Profiles	2020	Periodic inspection is in effect	x				
<b>Vehicle labelling</b>							
National Transport Policy 2017 - Policy Protocol Report	2017	Use safety rating data for the vehicle fleet to as ses s fleet quality. Vehicle efficiency labels/ratings at point of sale/purchase.	x				
<b>Vehicle manufacturing</b>							
12th Five Year Plan 2018-23	2019	Percentage of vehicle services delivered as per TAT = ≥90% (70% - 2017)	x				
National Transport Policy 2017 - Policy Protocol Report	2017	Support to manufacturers to develop vehicles that use alternative fuels.	x				
<b>Vehicle scrappage scheme</b>							
National Transport Policy 2017 - Policy Protocol Report	2017	Dereg is ter vehicles w ithou t renewed yearly m andatory reg is tration and ex clude them from the vehicle s tatis tics (S crapped/o ff-road/ex ported, etc) Develop a s y s tem for handling o f s crapped vehicles and dereg is tration Encouraging the retirement of old vehicles through both mandatory and voluntary programme.	x				
<b>Vehicle taxes</b>							
Bhutan transport 2040 Integrated strategic Vision	2013	waiver of import duty and sales tax on new 8–12 seater vans used for public transport	x				
National Transport Policy 2017 - Policy Protocol Report	2017	Differential taxes and charges based on fuel efficiency or greenhouse gas emissions (or proxies such as engine size or vehicle weight). ‘Feebates’: a set of fees (surcharges) for fuel-inefficient old vehicles and rebates for the purchase of new fuel efficient vehicles, based on fuel-efficiency, GHG emission (CO2) performance of the vehicle. Impose cess on fuel, the proceeds of which go towards a Central Road Fund, which is used for construction and maintenance purposes.	x				
National Transport Policy 2017 - Policy Protocol Report	2017	Differential taxes on vehicles	x				

## References:

- 1) UN Population Database (2022), <https://population.un.org/wpp/>
- 2) World Bank (2022), <https://data.worldbank.org/>
- 3) Global Materials Flow Database (UNEP, 2023), <https://www.resourcepanel.org/global-material-flows-database>
- 4) Emissions Database for Global Atmospheric Research (EC, 2023), <https://edgar.jrc.ec.europa.eu/>
- 5) International Council on Clean Transportation (2023)
- 6) UN Energy Statistics (2021)
- 7) Fossil Fuels Consumption Subsidies 2022 (IEA, 2022), <https://www.iea.org/reports/fossil-fuels-consumption-subsidies-2022>
- 8) Climate Change Dashboard (IMF, 2024), <https://climatedata.imf.org/pages/access-data>
- 9) Ember (2023), <https://ember-climate.org/data-catalogue/yearly-electricity-data/>
- 10) Coalition for Disaster Resilient Infrastructure (CDRI, 2023), <https://giri.unepgrid.ch/facts-figures/building-infrastructures>
- 11) Koks, et al. (2023), <https://iopscience.iop.org/article/10.1088/2634-4505/acd1aa>
- 12) Environmental Vulnerability Indicators (UN, 2018), <https://www.un.org/development/desa/dpad/least-developed-country-category/evi-indicators-ldc.html>
- 13) ) Global Status Report on Road Safety 2023 (WHO, 2023), <https://www.who.int/teams/social-determinants-of-health/safety-and-mobility/globalstatus-report-on-road-safety-2023>
- 14) Socioeconomic Data and Applications Center (CIESIN, 2023), <https://sedac.ciesin.columbia.edu/data/set/sdgi-9-1-1-rai-2023>
- 15) Country Official Statistics
- 16) Trademap (ITC, 2024), <https://www.trademap.org/>
- 17) International Organization of Motor Vehicle Manufacturers (OICA, 2023), <https://www.oica.net/production-statistics/>
- 18) ATO analysis of UNEP Index using latest data
- 19) Rapid Transit Database (ITDP, 2022), <https://www.itdp.org/rapid-transit-database/>
- 20) Socioeconomic Data and Applications Center (CIESIN, 2023), <https://sedac.ciesin.columbia.edu/data/set/sdgi-11-2-1-urban-access-publictransport-2023>
- 21) PPI Database (World Bank, 2023), <https://ppi.worldbank.org/en/ppi>
- 22) Organisation for Economic Co-operation and Development (OECD) (2022), <https://stats.oecd.org/Index.aspx?DataSetCode=CRS1#>
- (\*) National transport policies





<https://asiantransportoutlook.com/>