

Transport in Bhutan: State of Play

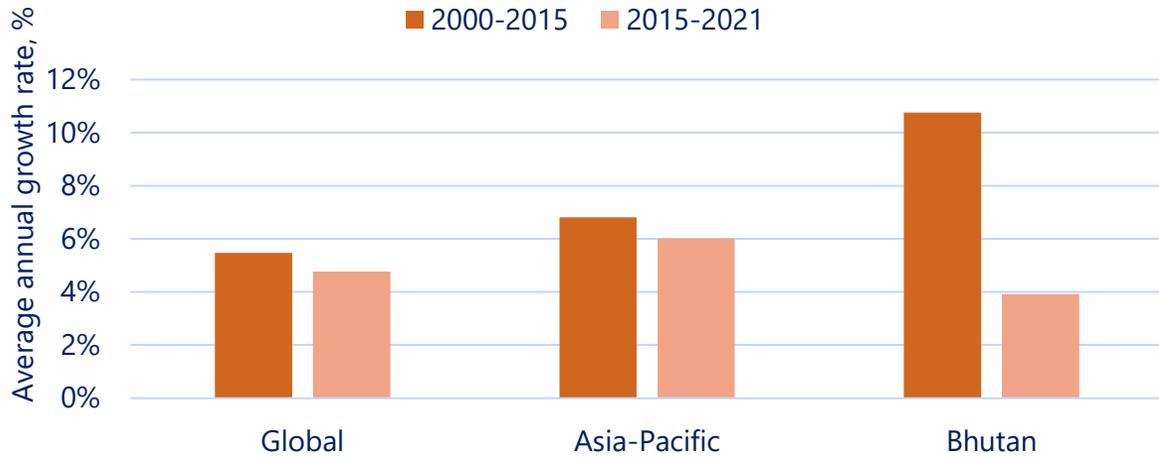
Insights from
Asian Transport Outlook



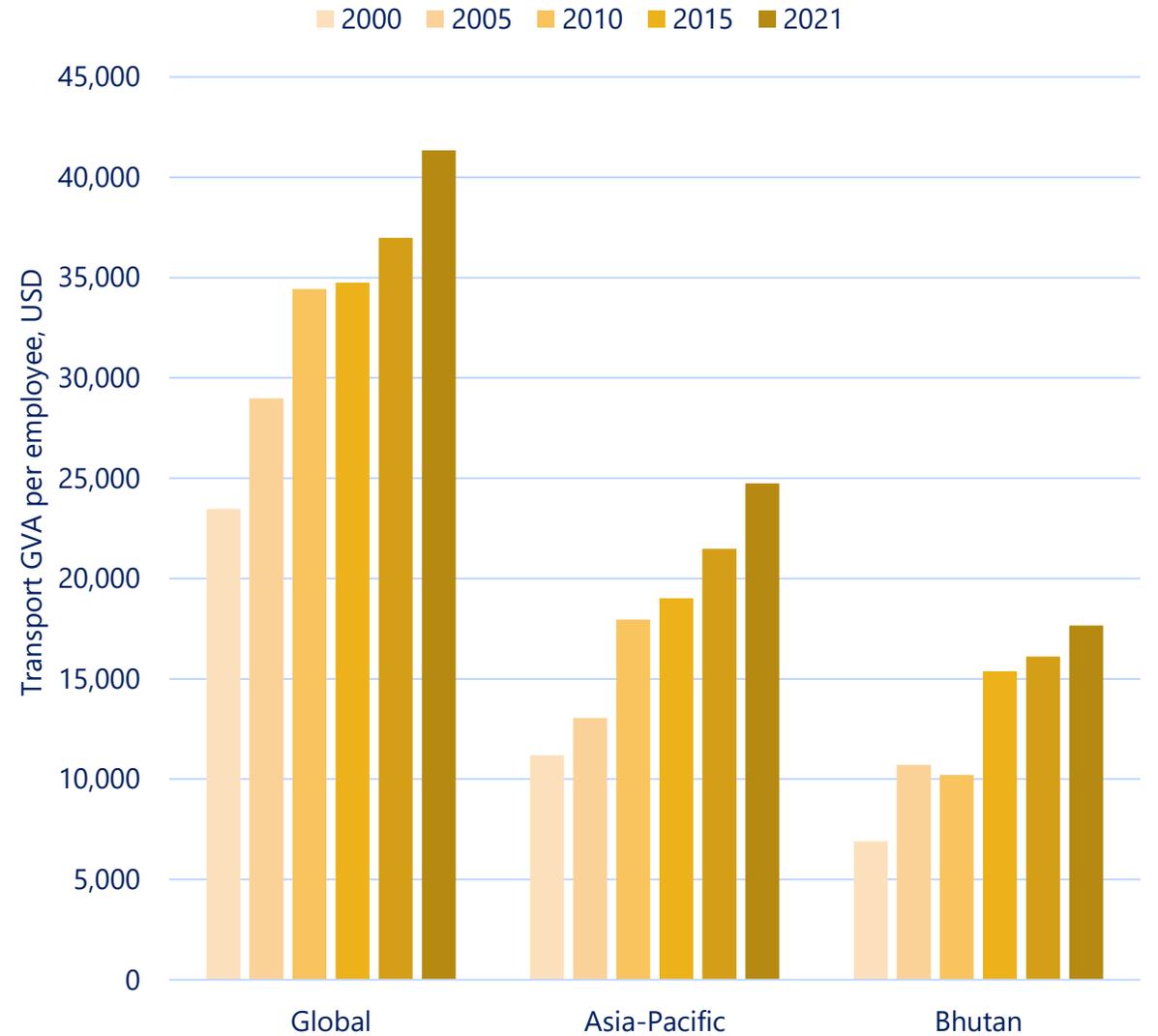
Insights from data

Transport & Economy

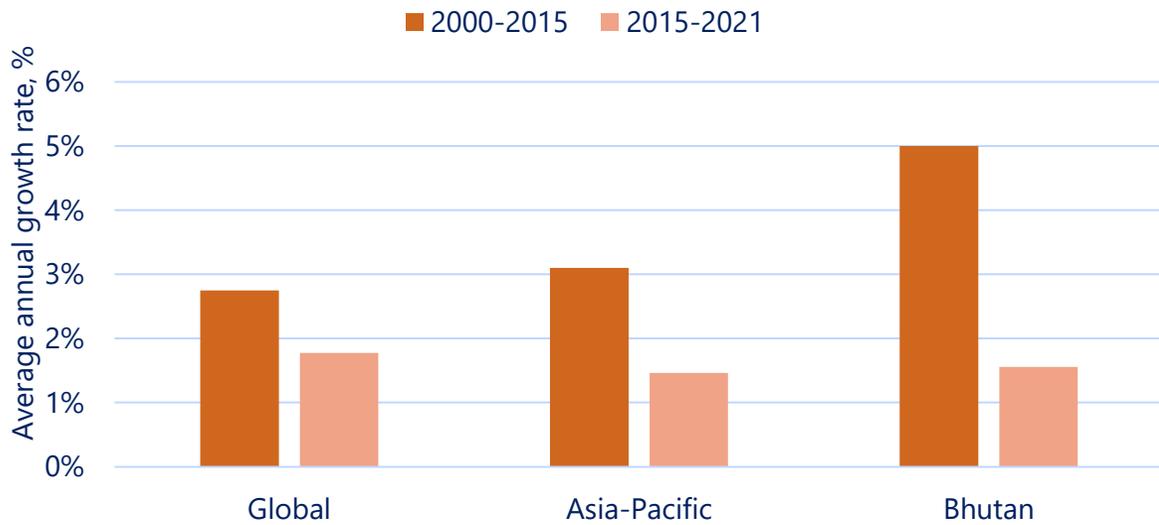
Annual Growth of Gross Value Added by Transport, Storage, and Communications



Gross Value Added per Employee in Transport, Storage, and Communications



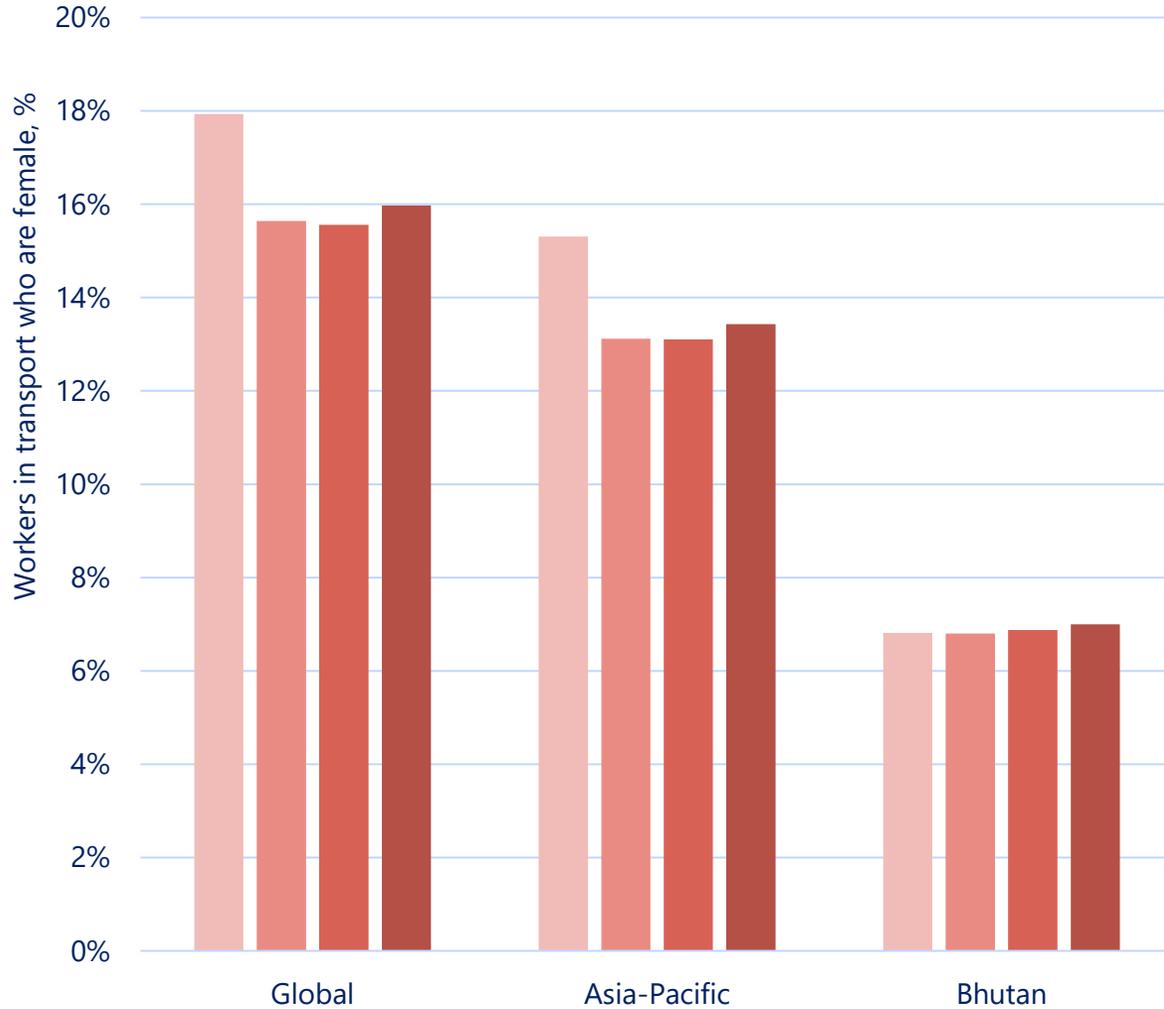
Employment in Transport, Storage, and Communications



Female Employment and Wage in Transport

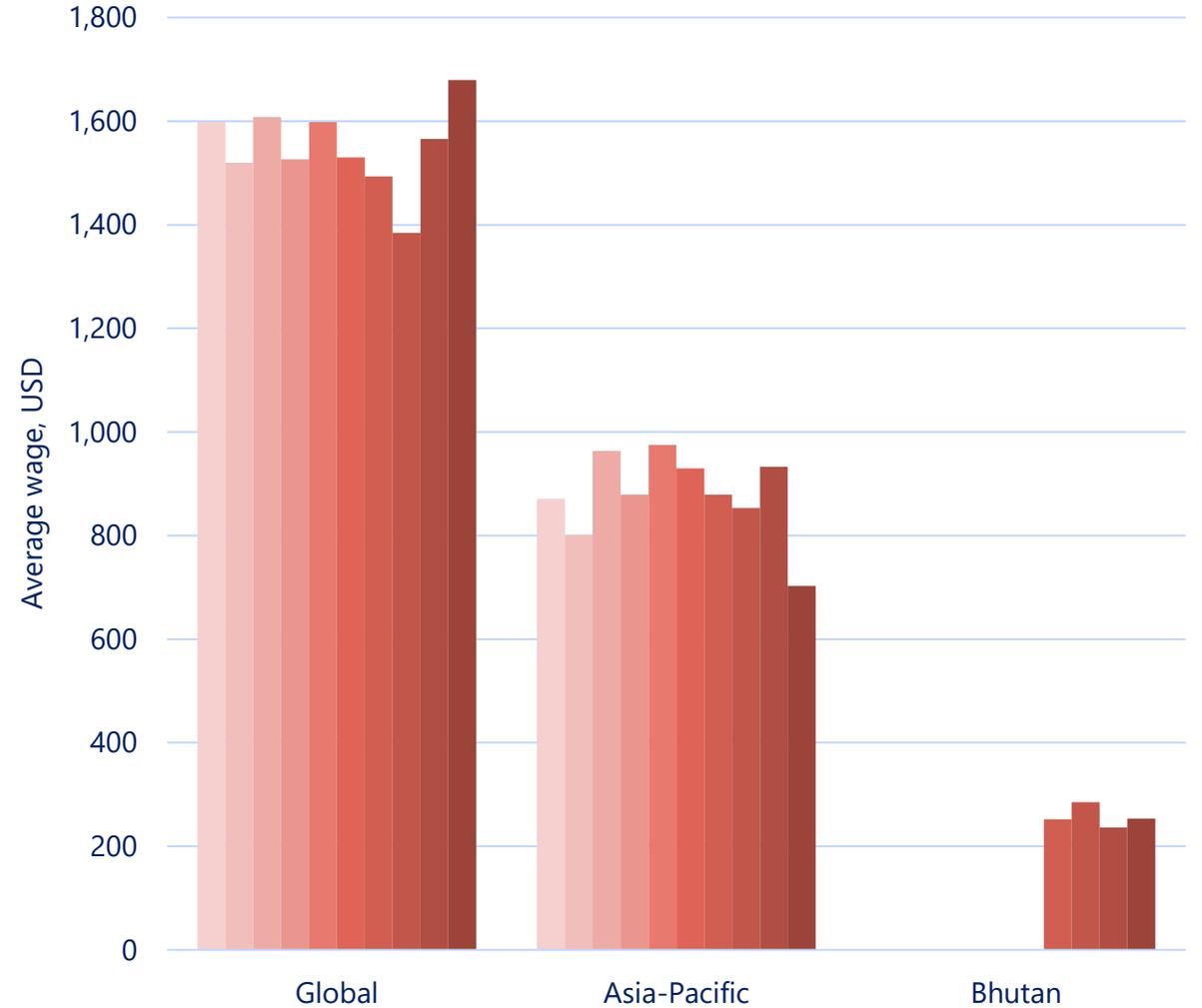
Female Employment in Transport, Storage, and Communications

2000 2015 2020 2021



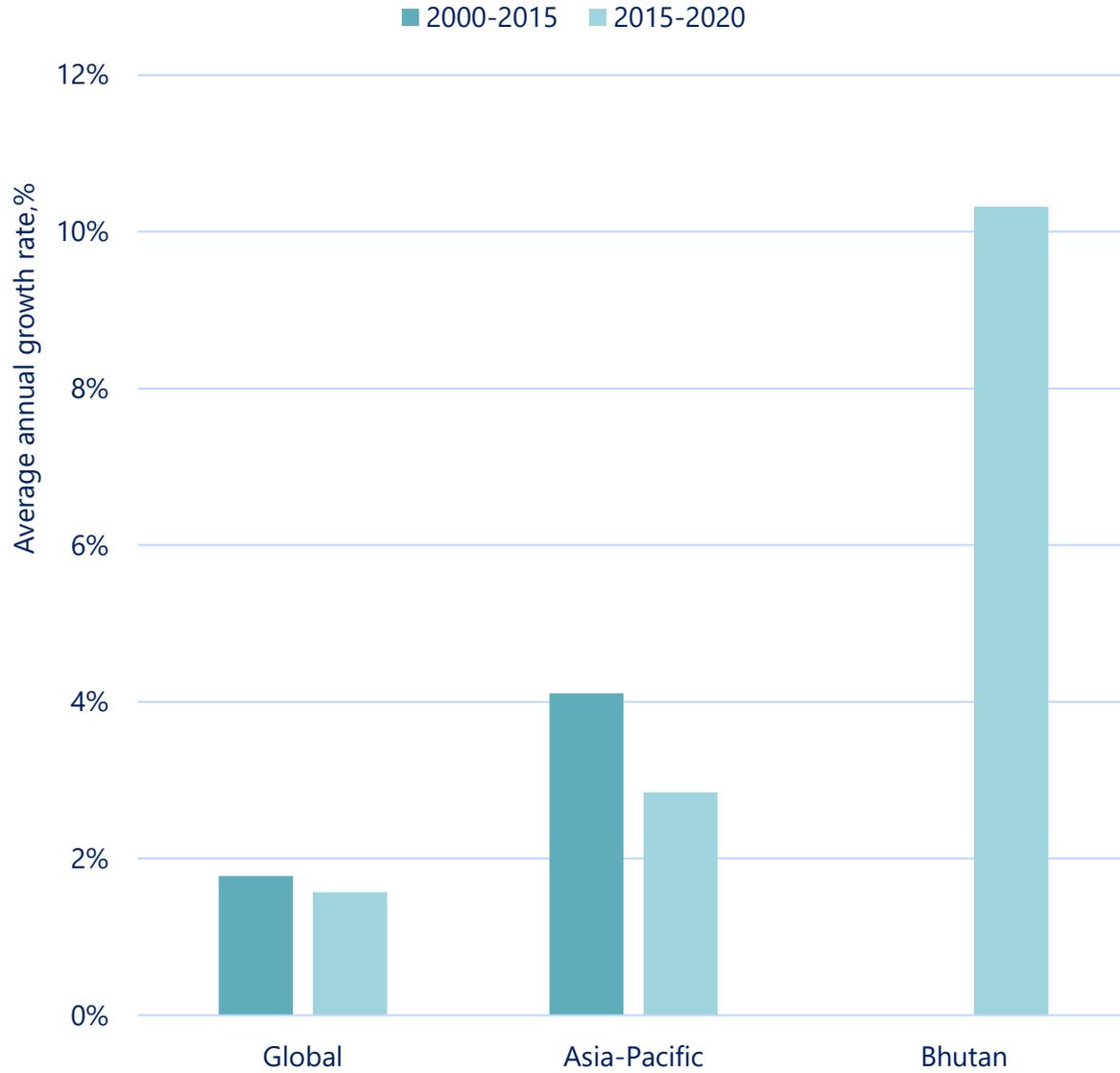
Average Monthly Wages in Transport, Storage, and Communications

2012 2015 2020 2021

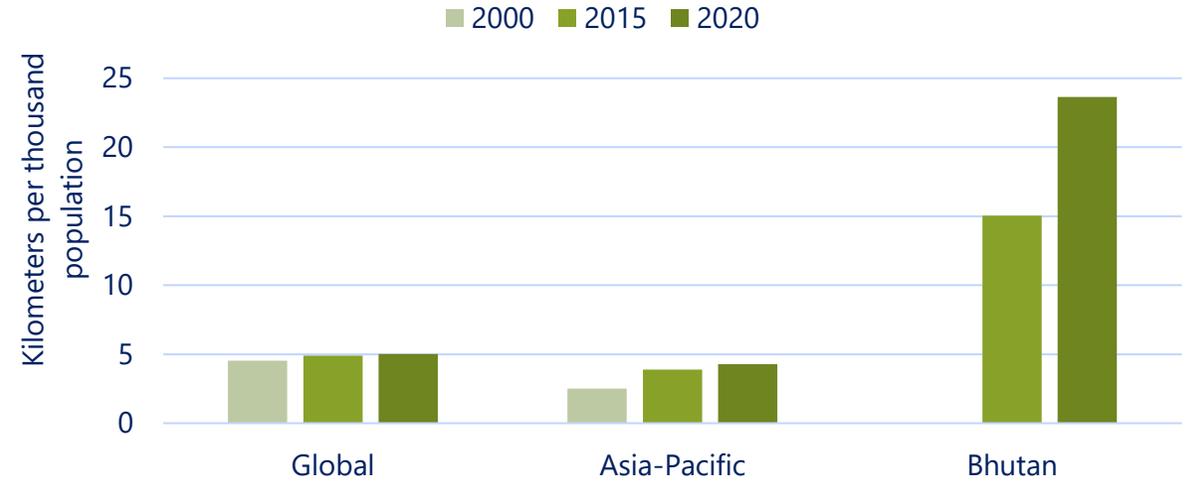


Road Infrastructure

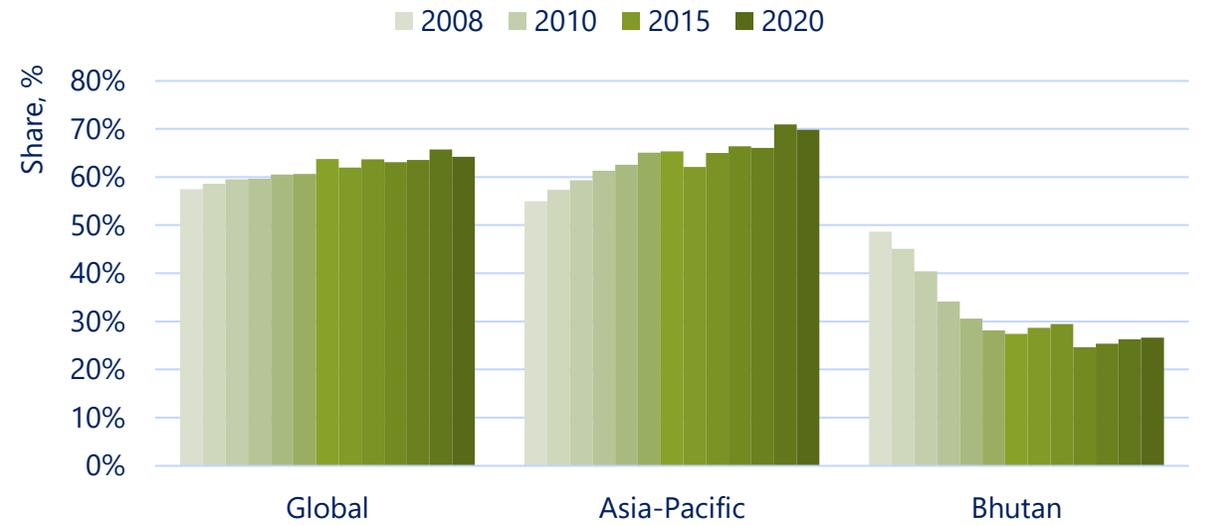
Annual Growth of Road Infrastructure



Road Infrastructure Density (per capita)

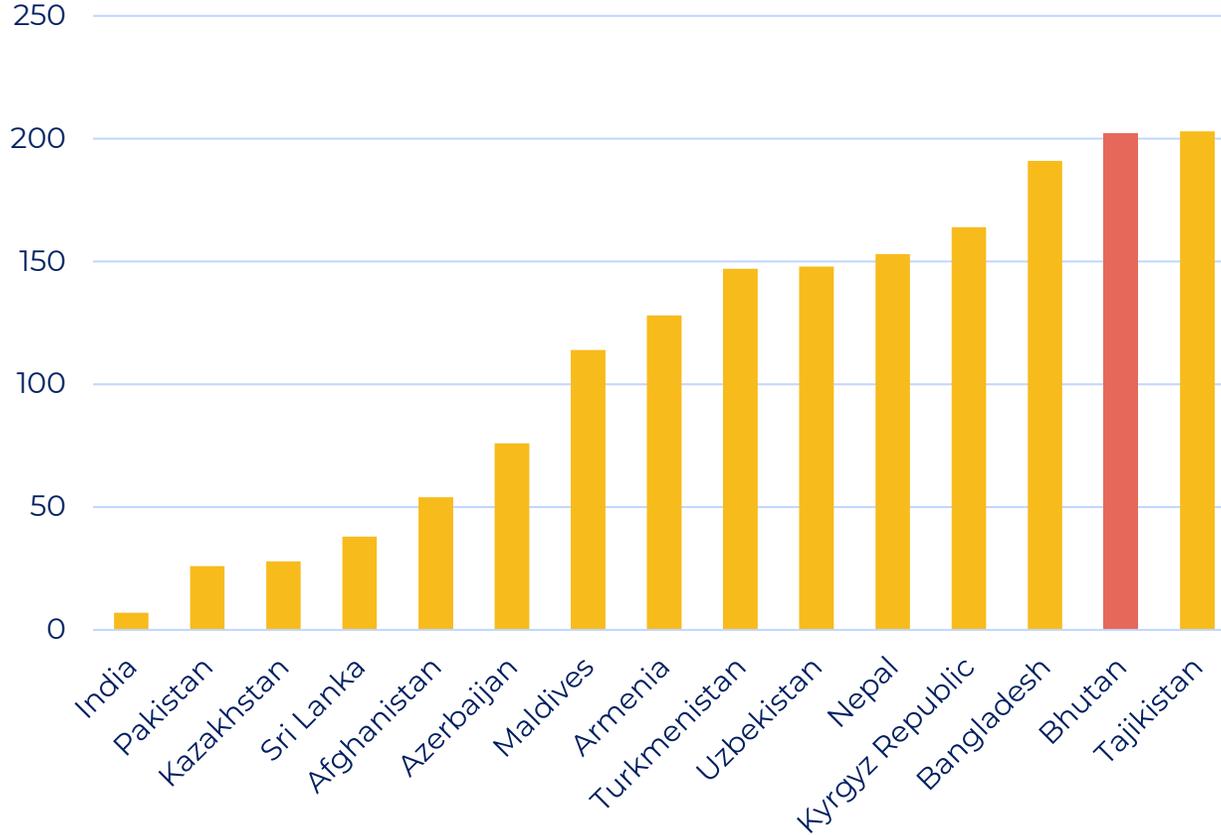


Paved Road Ratio

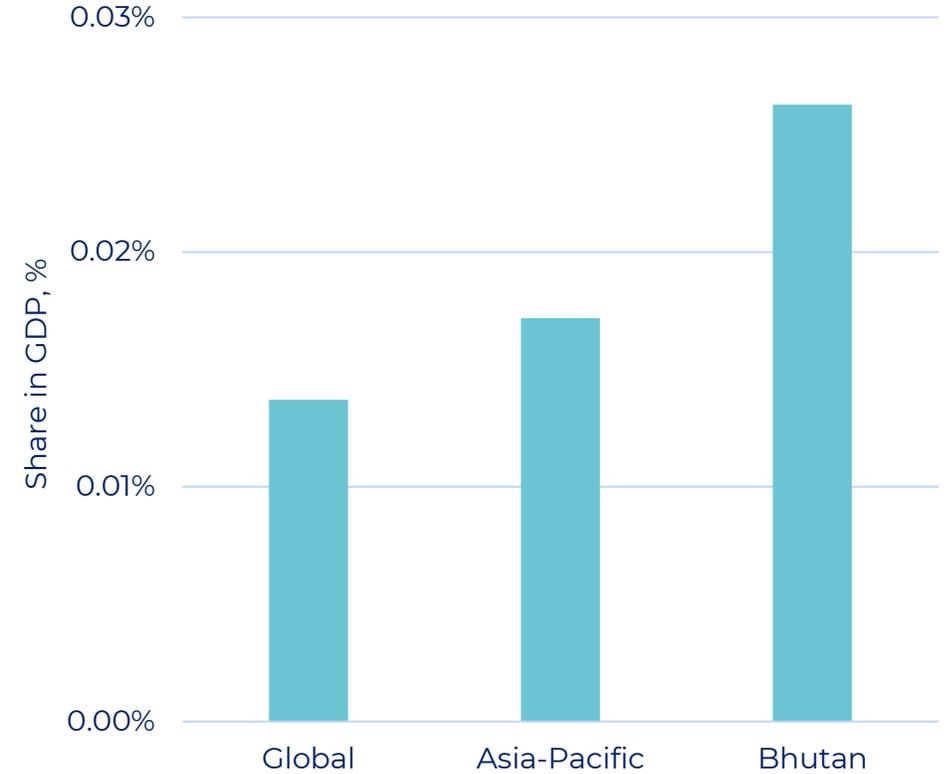


Climate Change Adaptation

National Road Vulnerability Index Rank (NRVI) (2023)

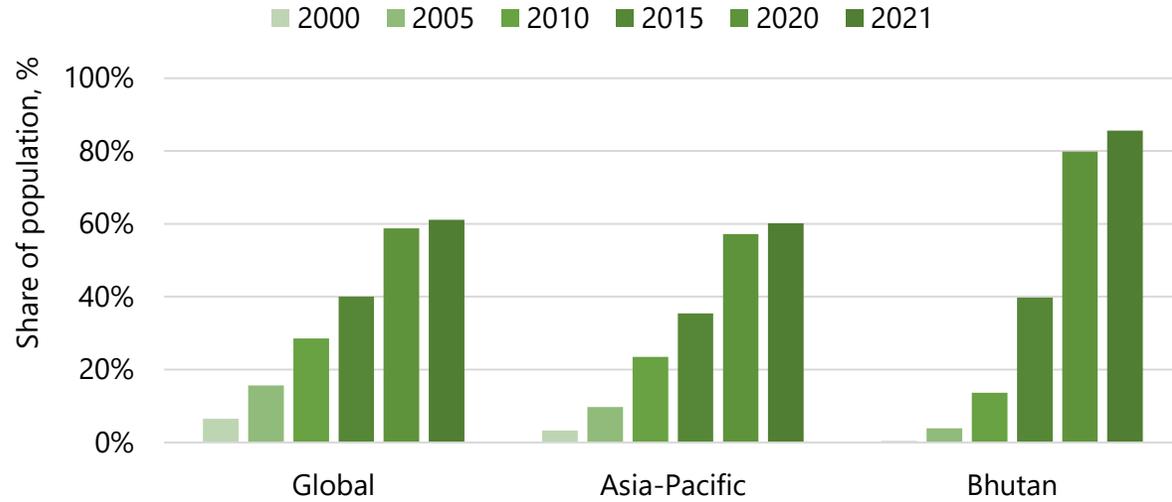


Multi-Hazard Expected Annual Damages to Roads, Rail, and Ports as Share of GDP

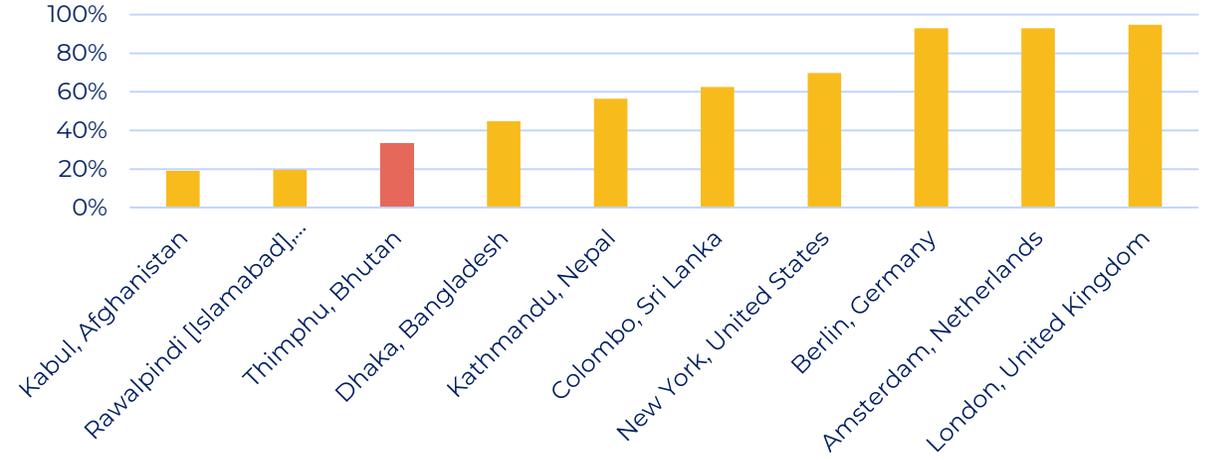


Access

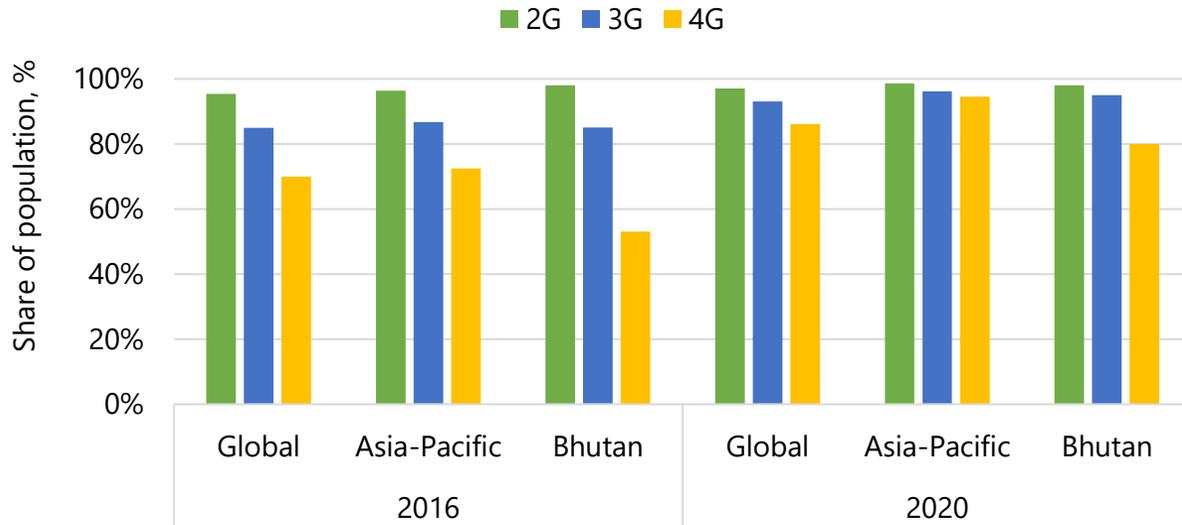
Share of Population Using the Internet



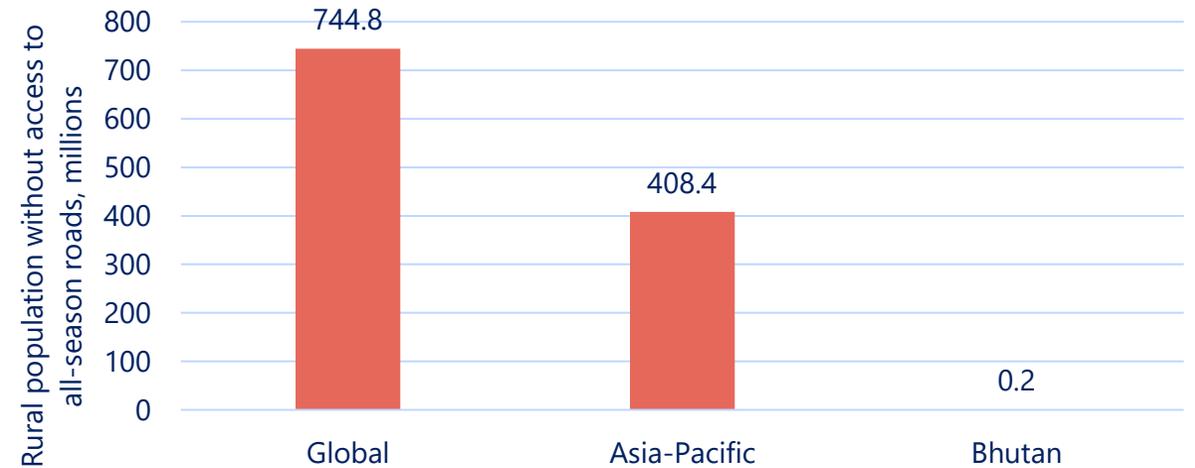
Percentage Access to Public Transport (2020)



Population Covered by Mobile Network



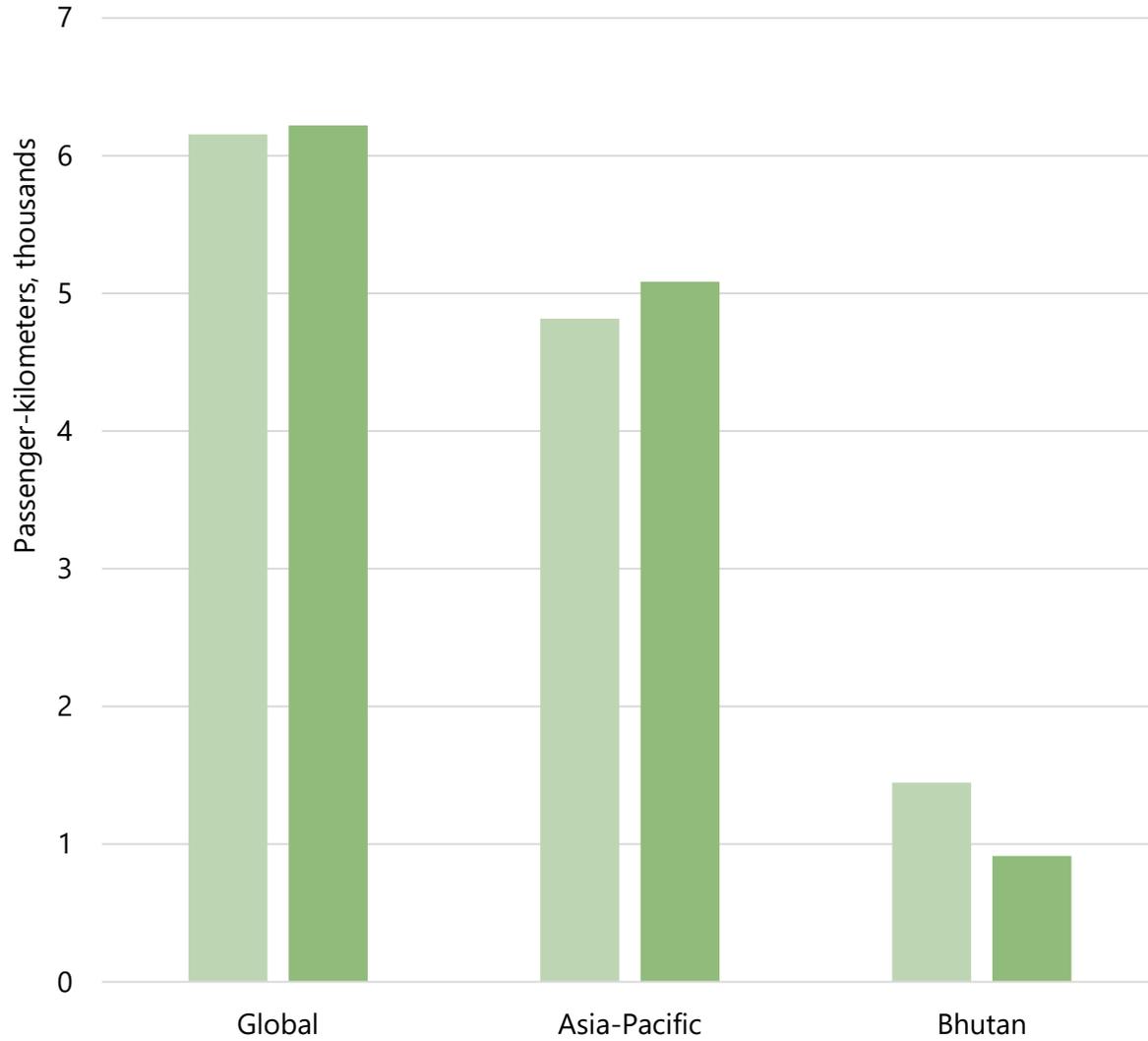
Rural Population without Access to All-Season Roads, 2022



Transport Activity

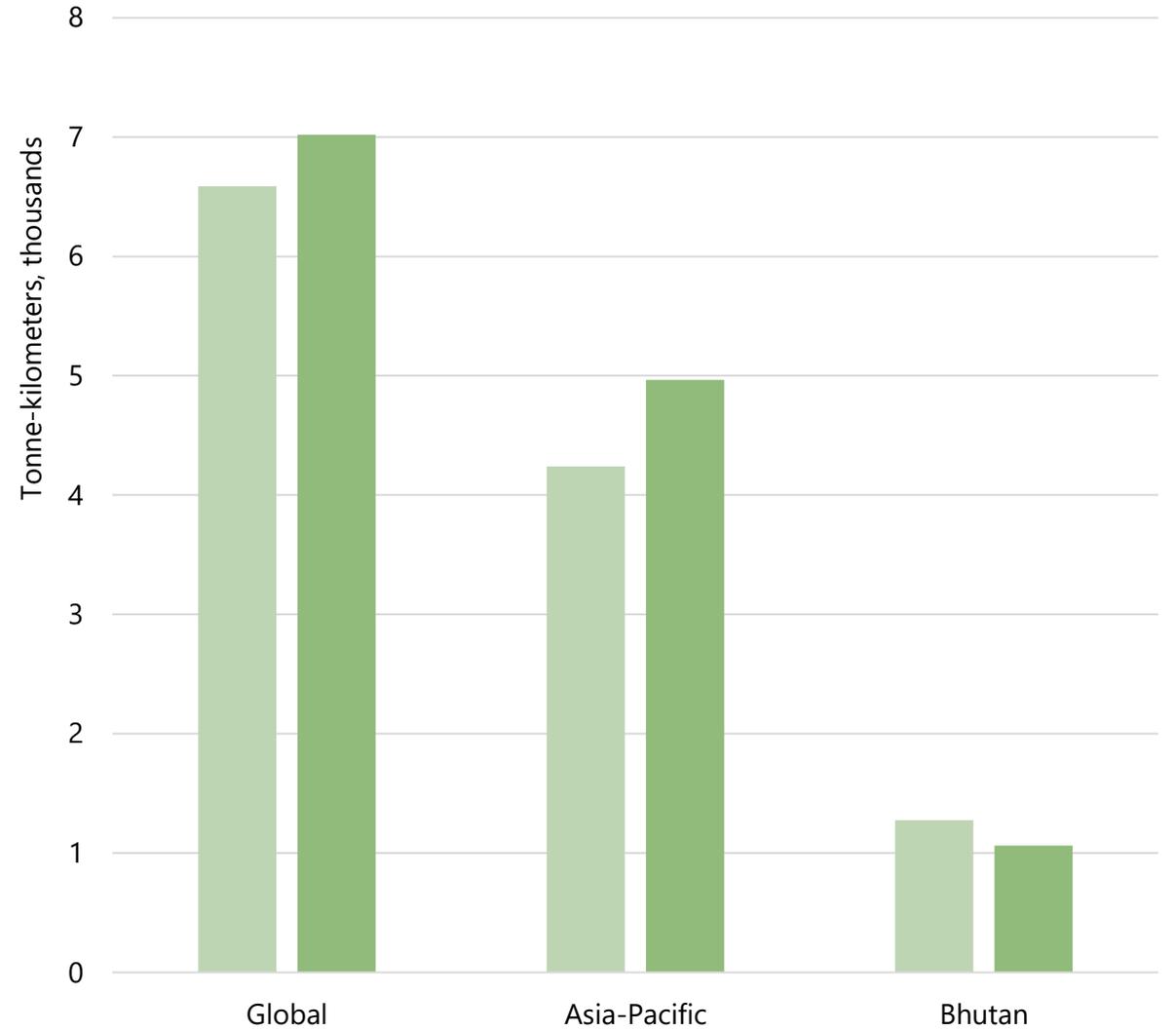
Passenger Transport Activity per capita

2015 2021



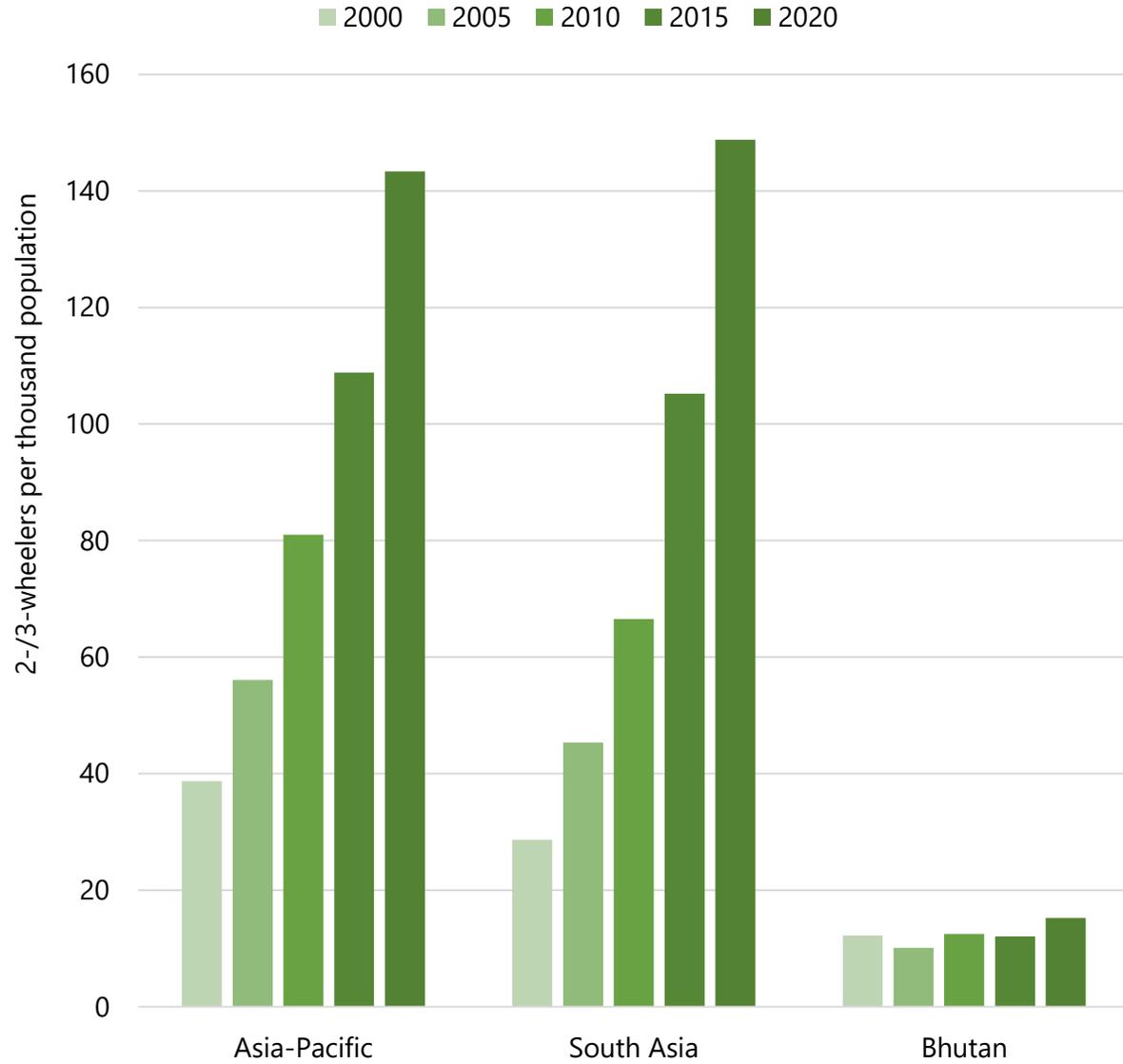
Freight Transport Activity per capita

2015 2021

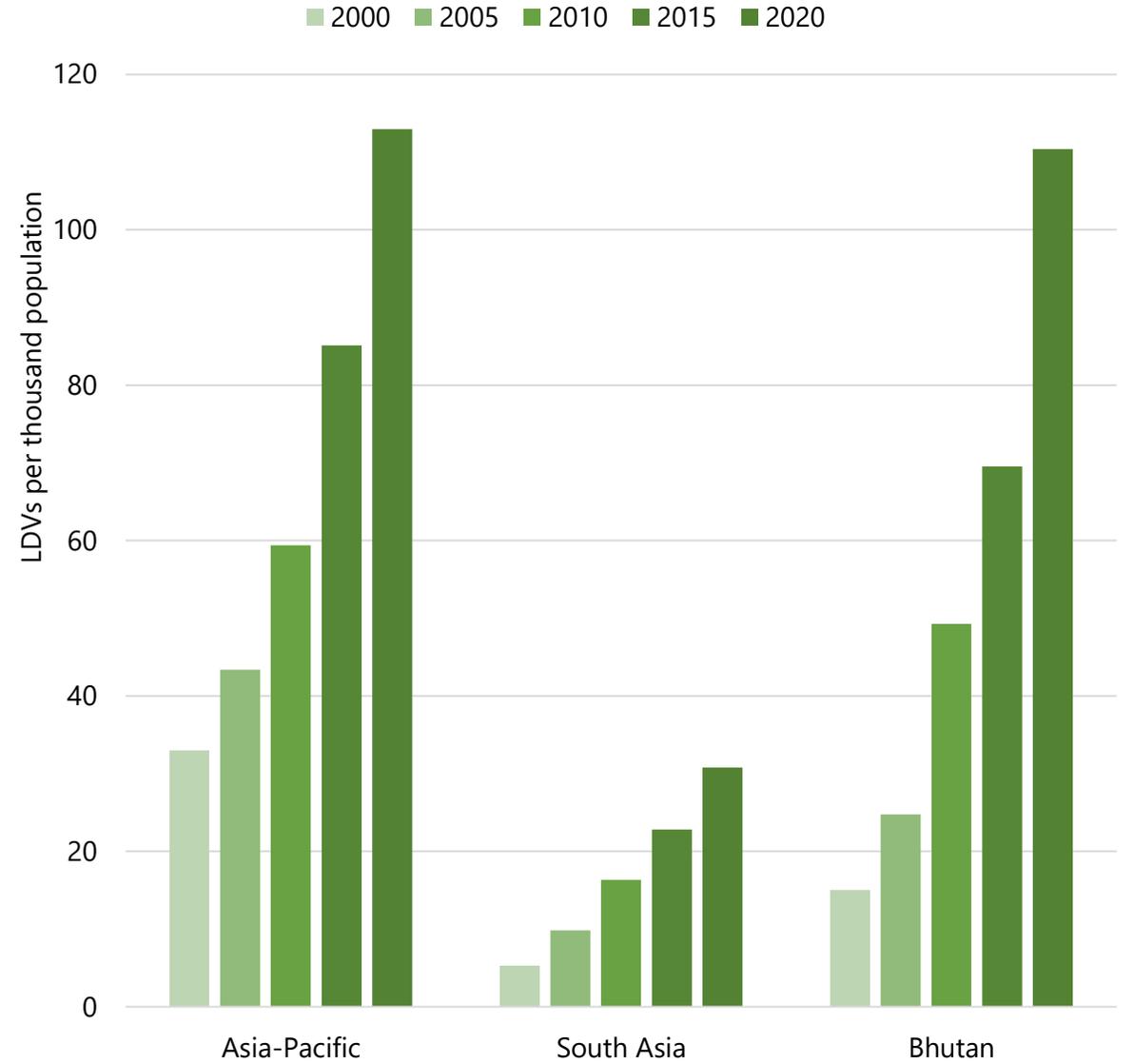


Vehicle Ownership

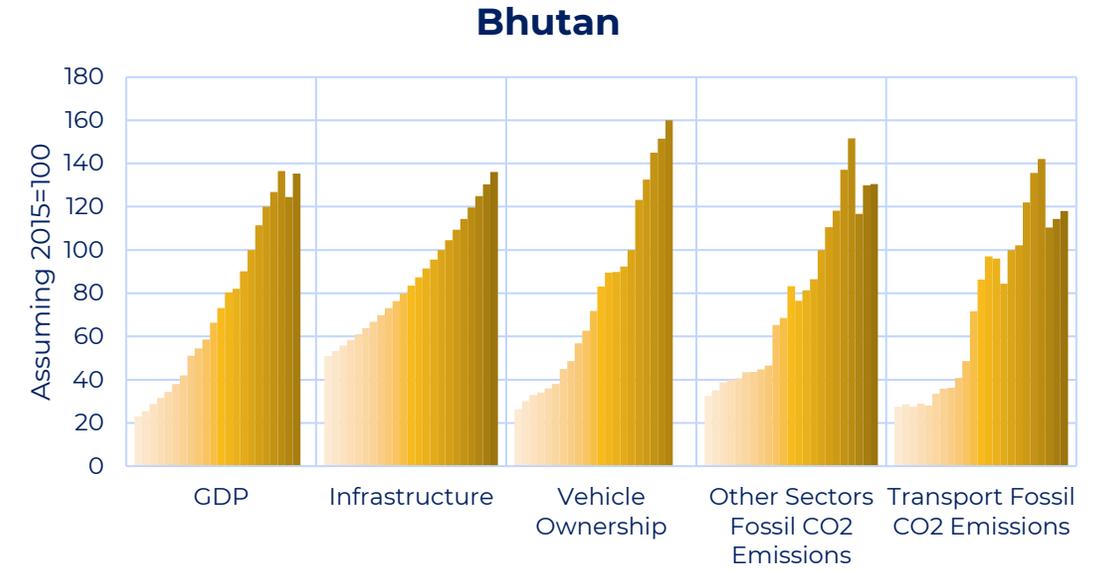
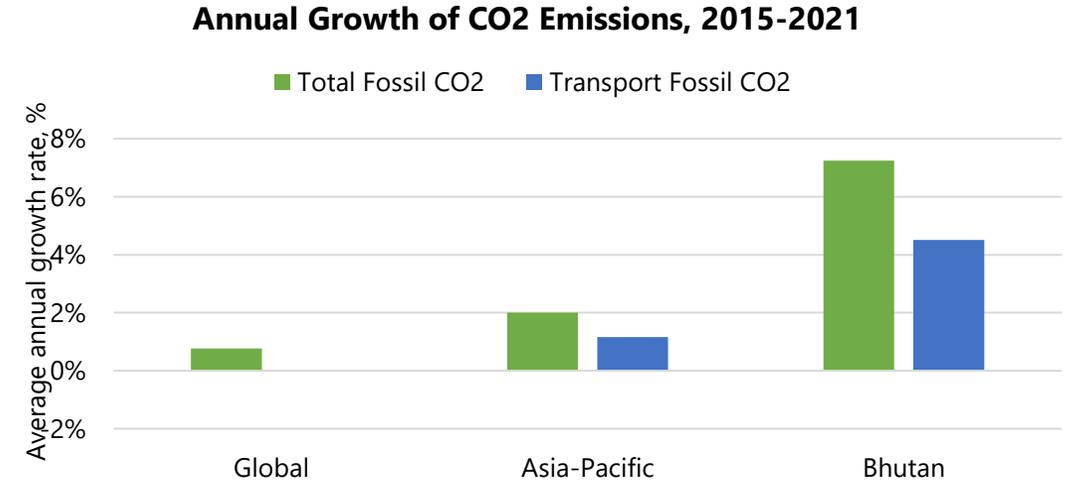
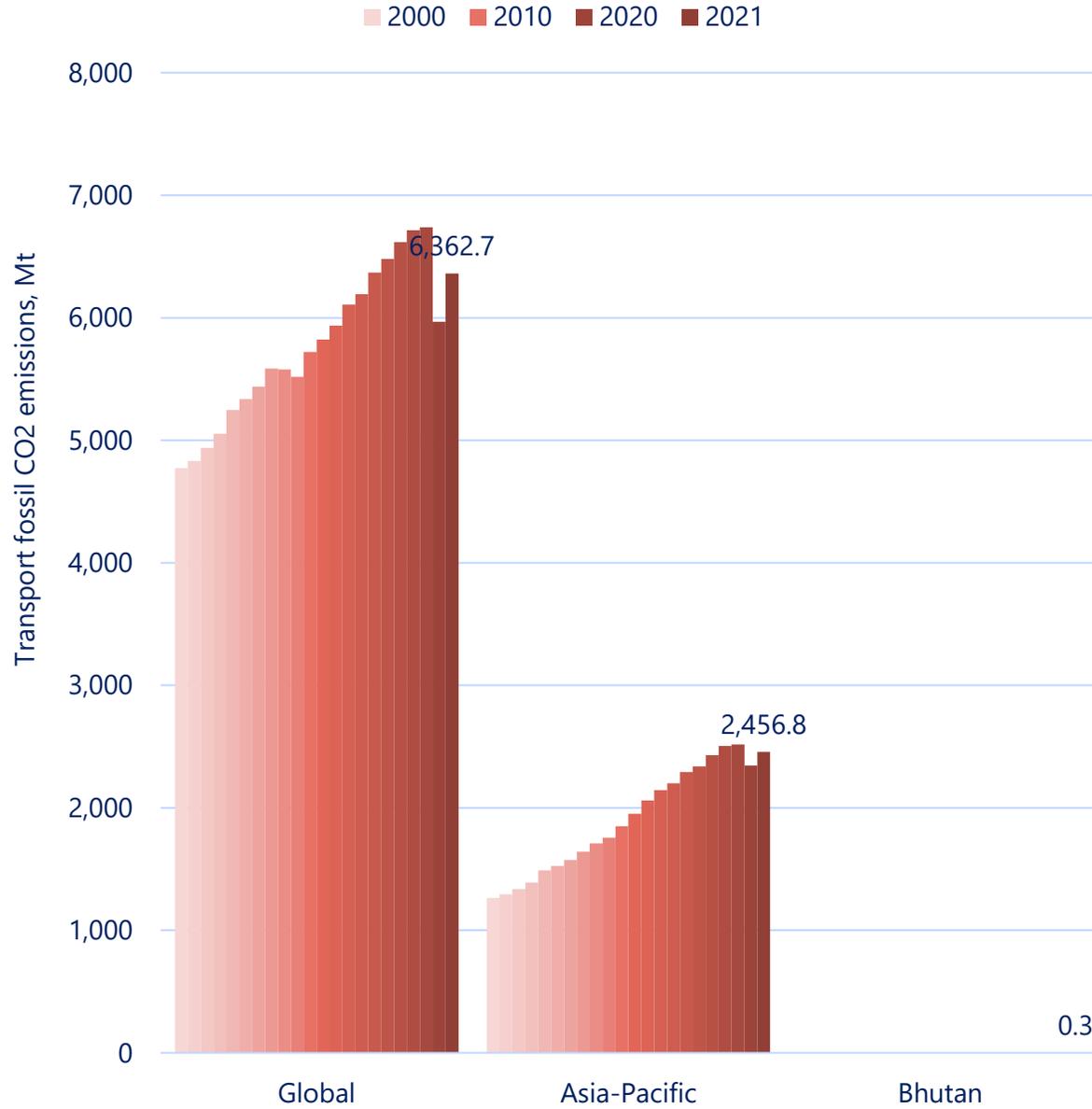
2- and 3-wheeler Registrations per Thousand Population



LDV Registrations per Thousand Population

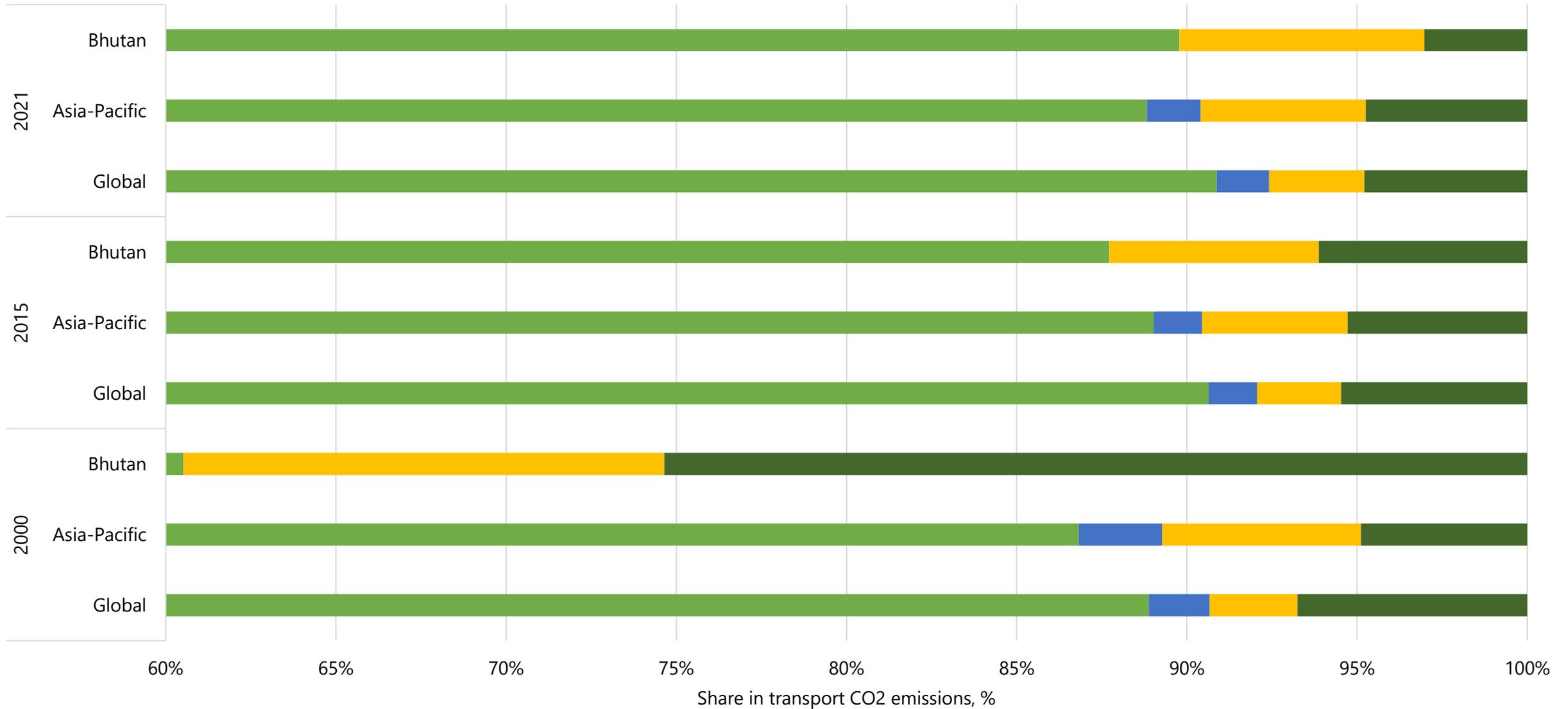


Transport CO2 Emissions



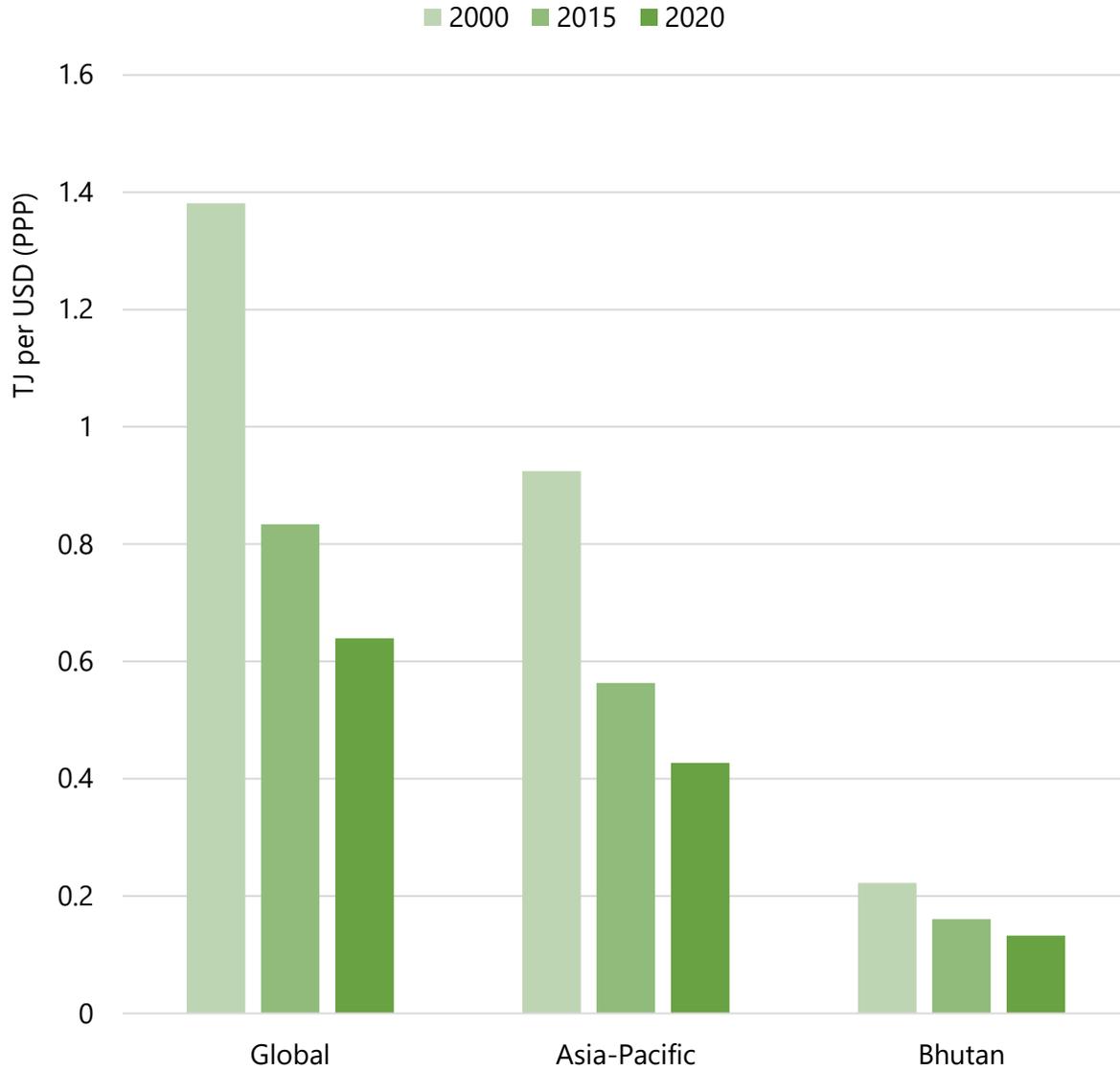
Transport CO2 Emissions by mode

Road Rail Domestic navigation Domestic aviation

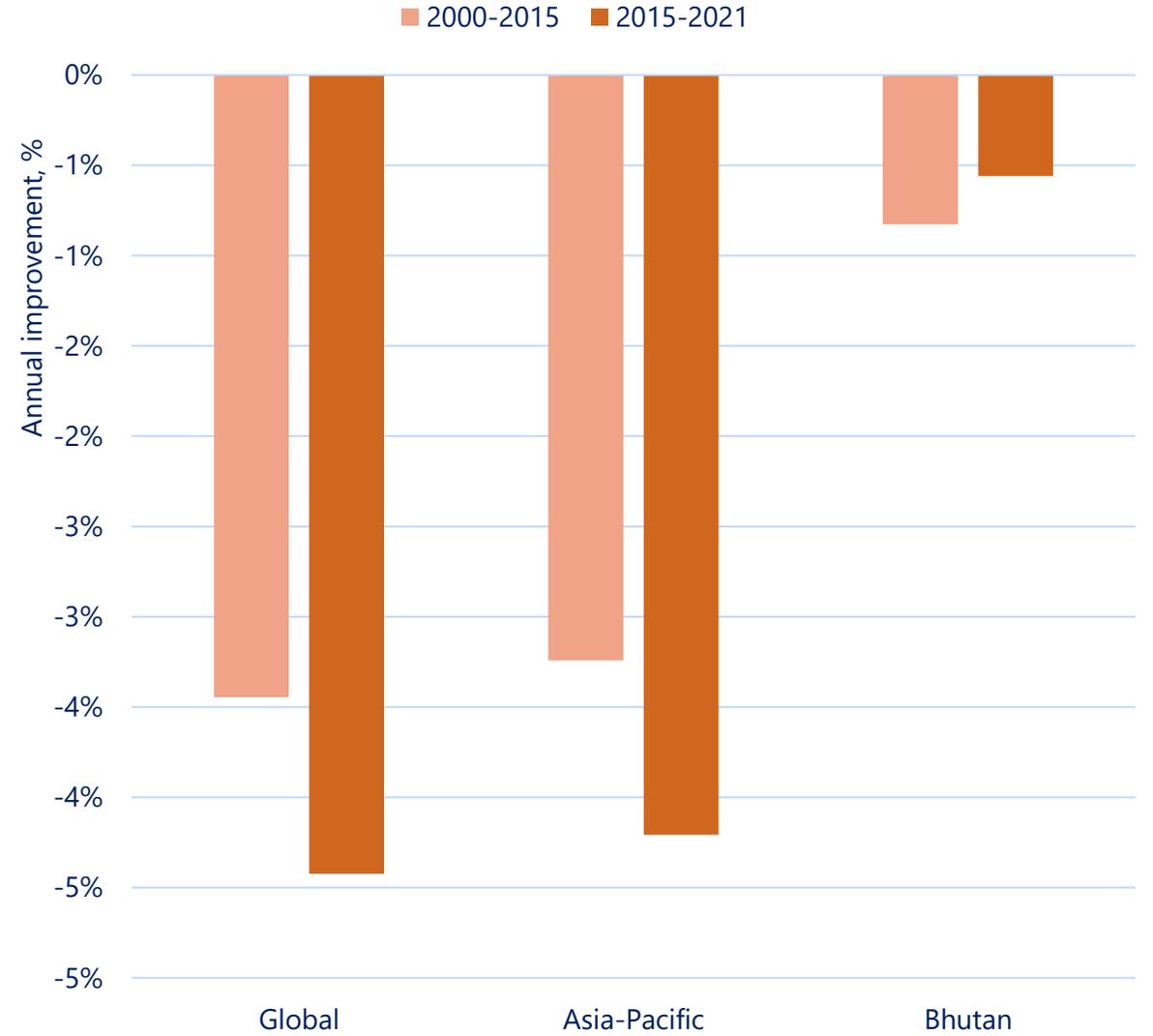


Energy and CO2 Intensity

Transport Energy Intensity

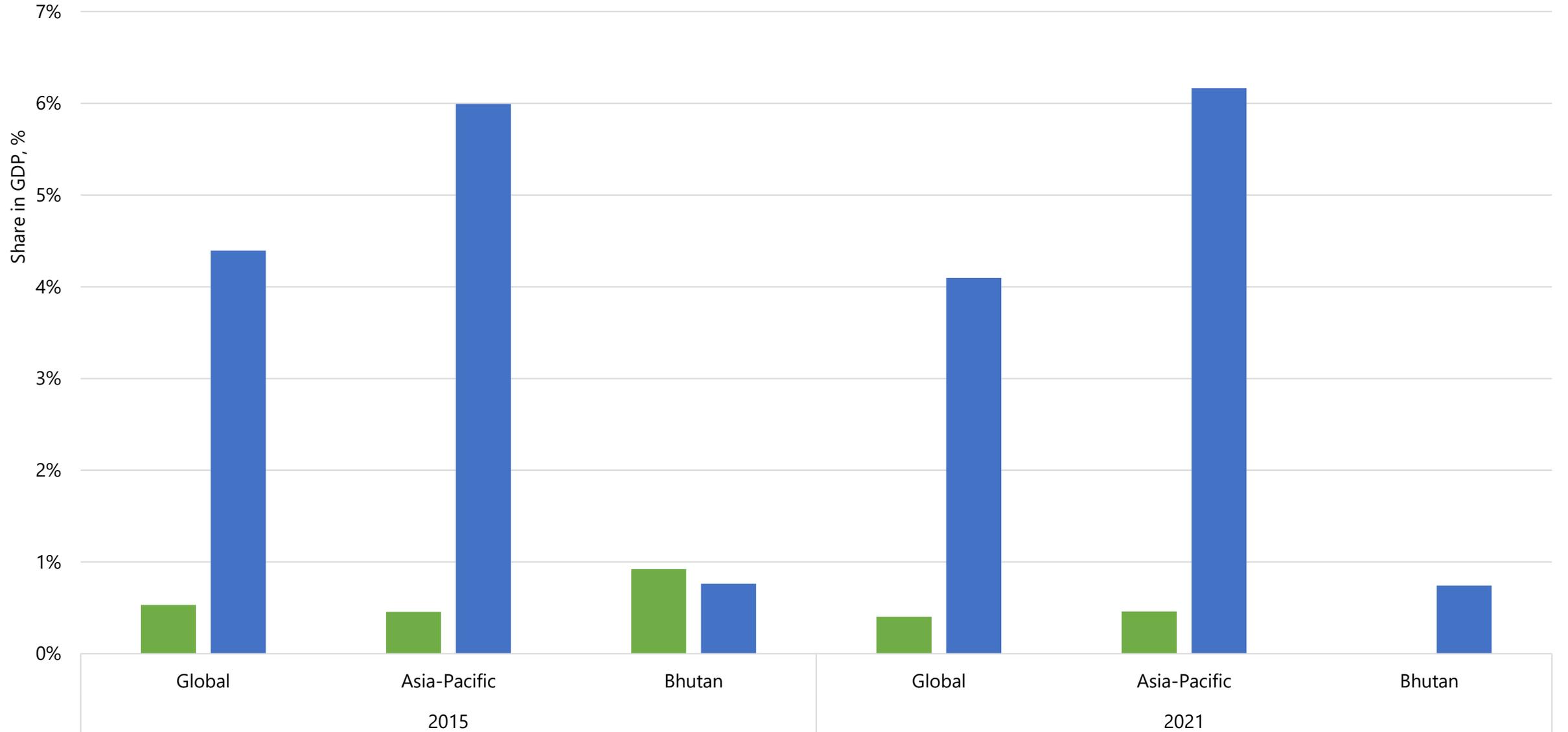


Annual Improvement of Transport CO2 Emissions Intensity with GDP



Transport fossil fuel subsidies, implicit and explicit

■ Explicit, % of GDP ■ Implicit, % of GDP

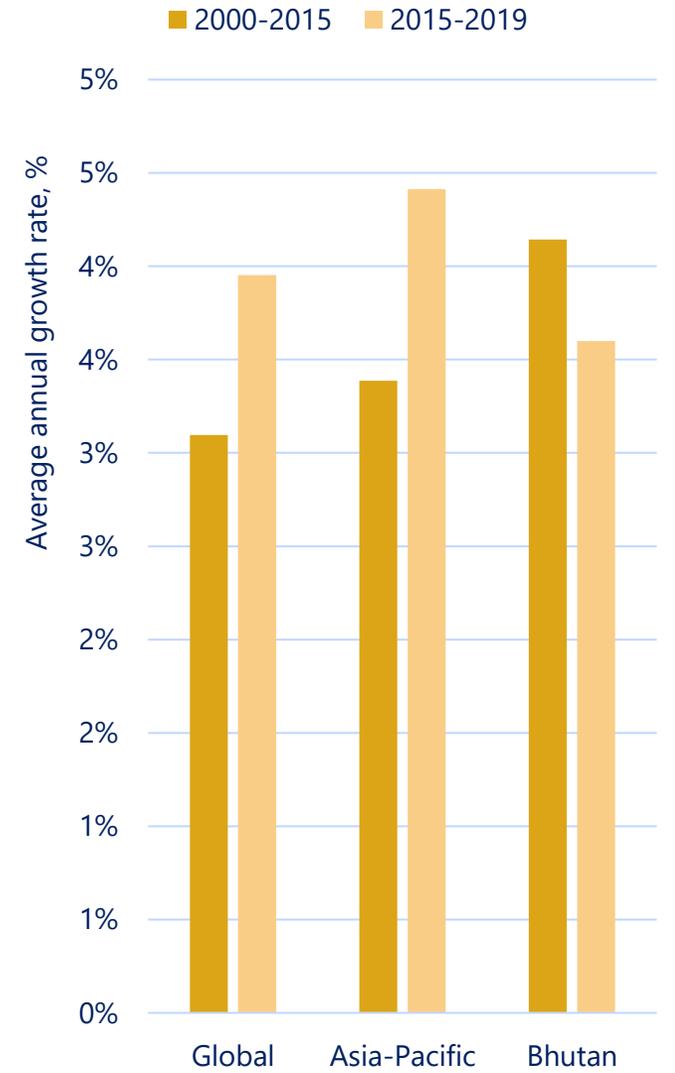


Air Pollution

Annual Growth of Air Pollutant Emissions



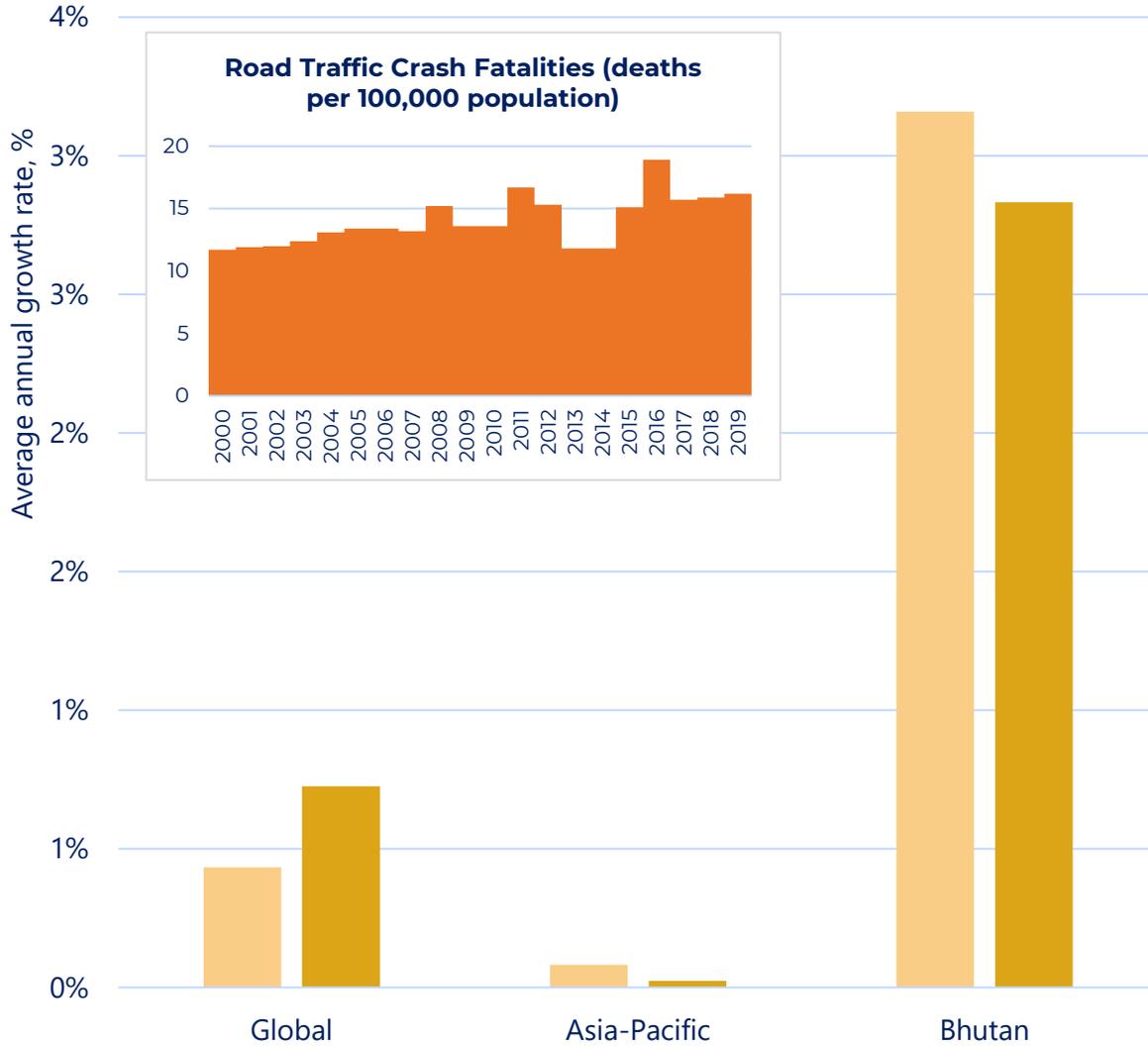
Deaths due to Occupational Exposure to Diesel Engines



Road Safety

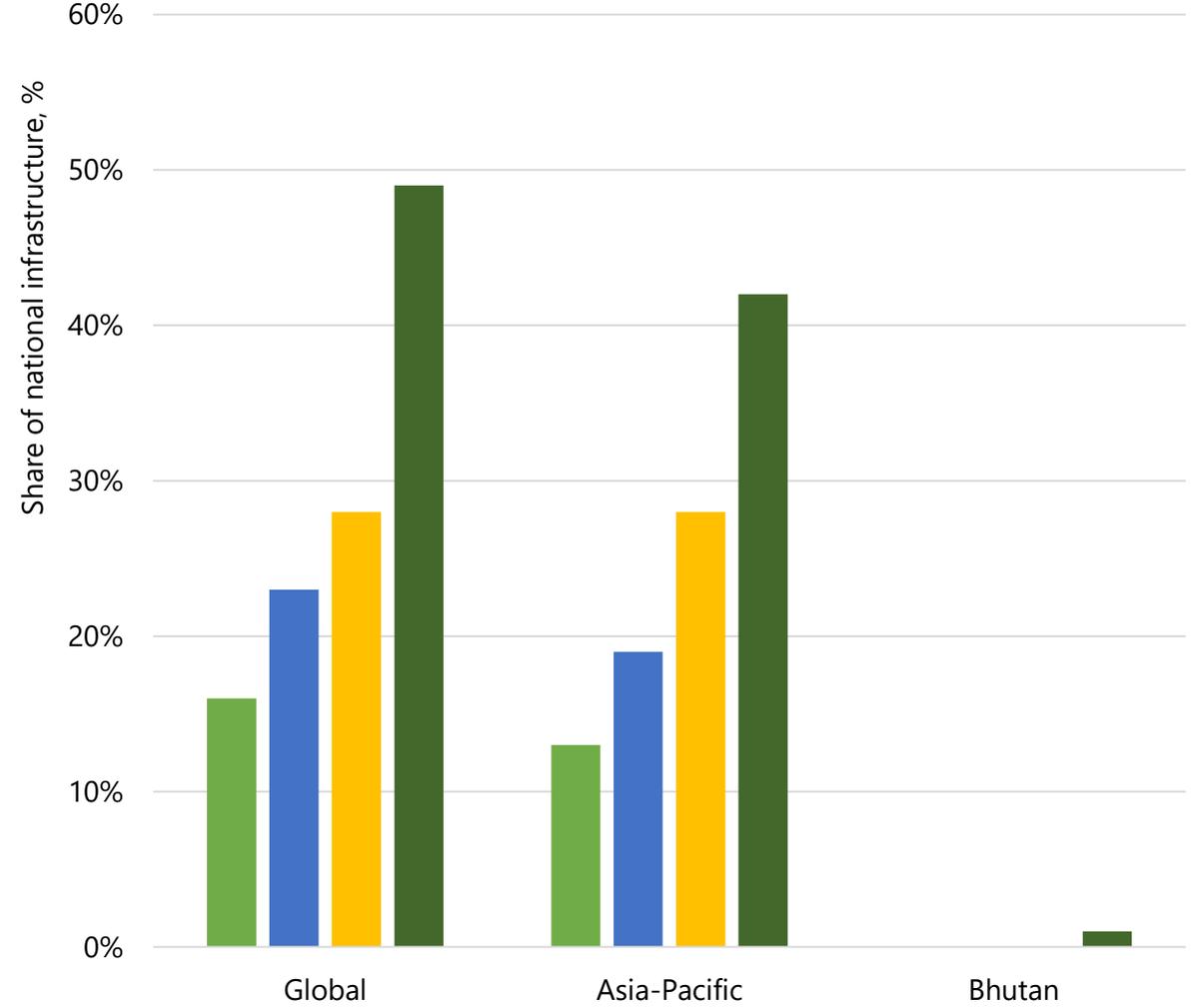
Annual Growth of Road Crash Fatalities

2000-2015 2015-2019



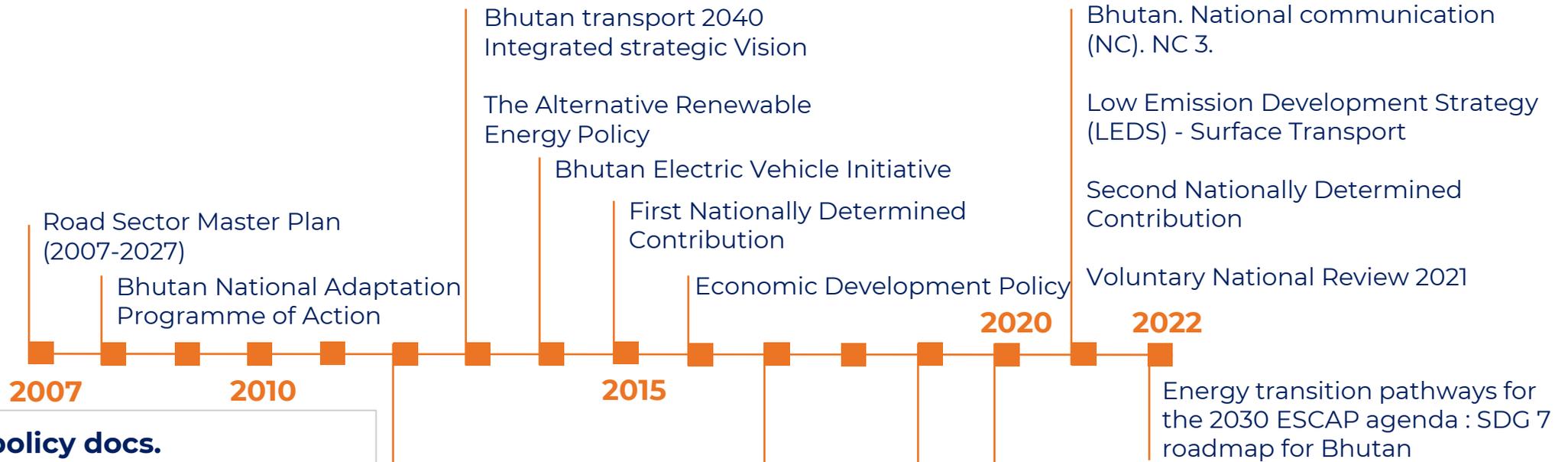
Share of National Infrastructure with 3-star or better rating

Pedestrians Bicyclists Motorcyclists Vehicle occupants



Policy measures

Policy Documents in Bhutan

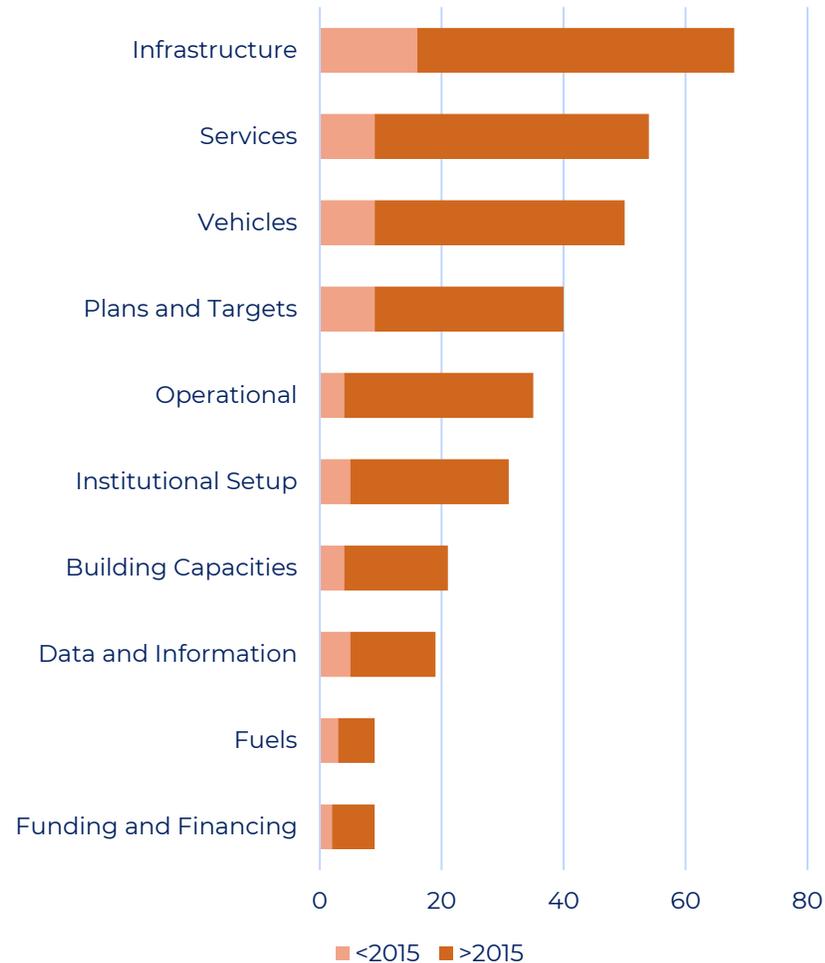


No. of policy docs.

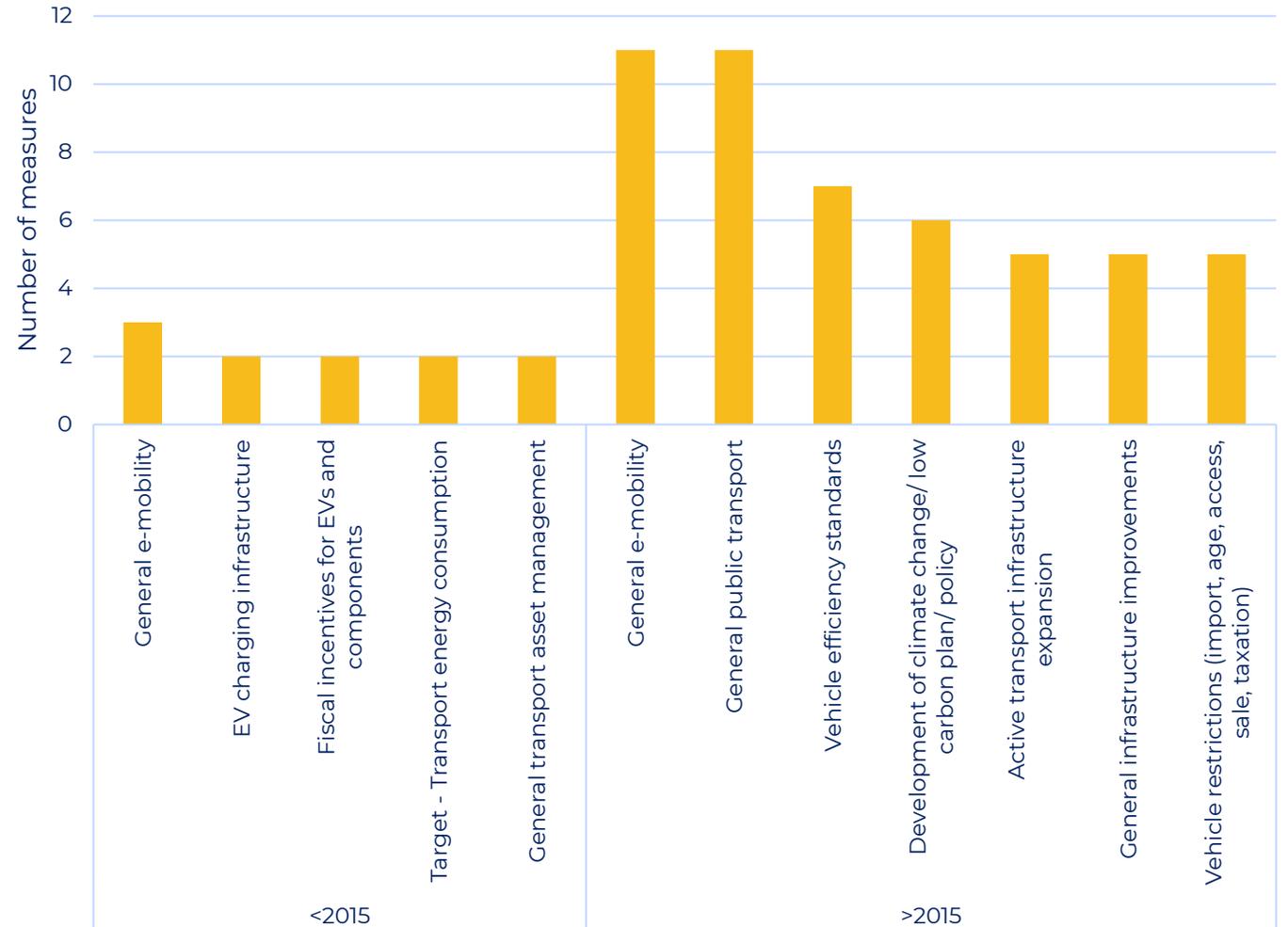


Changing trends of policy measures

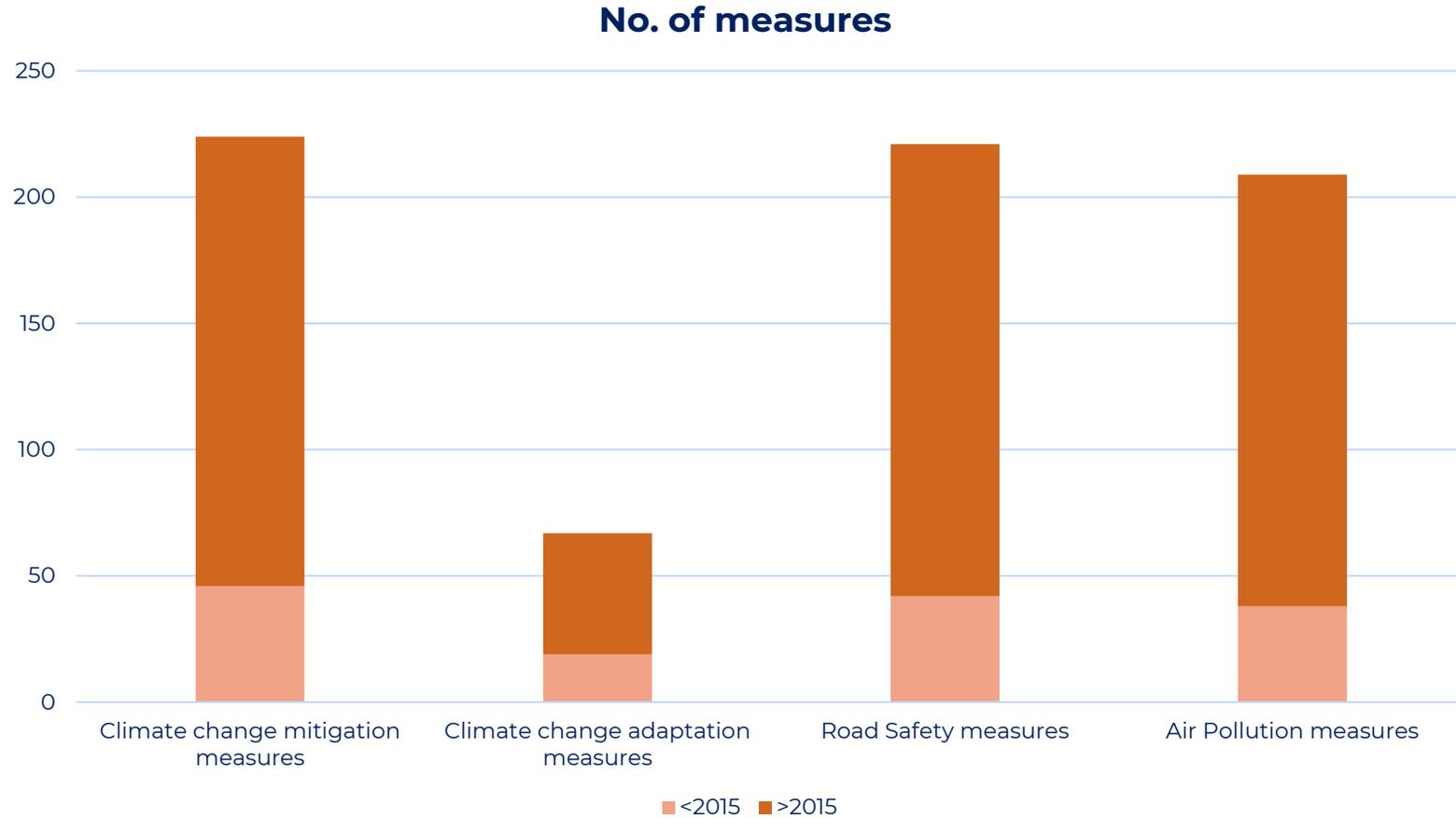
No. of masures/ targets



Top frequented measures



Changing trends of policy measures



Climate Adaptation

Measure	Highlights	Documents
Climate-resilient design standards; Technical standards for road infrastructure	<i>Review construction standards and methods to ensure sustainability; Guideline for design and construction of climate-resilient road infrastructure; improving road design standards</i>	National Transport Policy 2017 - Policy Protocol Report; Voluntary National Review 2021; Bhutan transport 2040 Integrated strategic Vision
Transport infrastructure resilience; General infrastructure improvements	<i>Promote green and climate resilient infrastructures; Improving road design standards; Climate proof transport infrastructure against landslides and flash floods, particularly for critical roads, bridges, tunnel and trails; planning the alignment of new roads carefully to avoid areas of ecological sensitivity</i>	National Transport Policy 2017 - Policy Protocol Report; Bhutan. National communication (NC). NC 3.; First Nationally Determined Contribution; National Environment Strategy (2020); Road Sector Master Plan (2007-2027); Voluntary National Review 2021; Technology Action Plan Report
Resilient transport technologies	<i>Pilot projects to demonstrate the full range of climate-resilient farm road development technology,</i>	National Environment Strategy (2020); Technology Action Plan Report
Transport adaptation/ emergency/ disaster plan/ policy	<i>Formulate and implement National Adaptation Plans (NAPs)</i>	First Nationally Determined Contribution
Disaster notification/ early warning system; Disaster monitoring and risk assessment for transport infrastructure	<i>Strengthen integrated risk monitoring and early warning systems; Improved monitoring and detection of hydromet extremes using remote sensing and satellite-based technologies; Hazard Identification and Risk mitigation with proper audit and surveillance</i>	Bhutan National Adaptation Programme of Action; Bhutan. National communication (NC). NC 3.; First Nationally Determined Contribution; National Environment Strategy (2020); 12th Five Year Plan 2018-23
Transport asset management	<i>institute a proper road asset management system; progressive upgrading of all dzongkhag roads to all-weather (sealed) standards; Quality Assurance measures shall be developed and continuously reviewed in order to promote quality construction works</i>	National Transport Policy 2017 - Policy Protocol Report; Bhutan transport 2040 Integrated strategic Vision; National Environment Strategy (2020); Road Sector Master Plan (2007-2027); Technology Action Plan Report
Investment	<i>Bhutan Green Transport program 49.8 Million USD Enhancing Climate Resiliency of Road Network and its Assets 270 Million USD</i>	Bhutan. National communication (NC). NC 3.
Education and training	<i>Enhance preparedness and response to climate change induced disasters at the national and local levels</i>	Bhutan. National communication (NC). NC 3.
Data repositories and data collection	<i>Database for road slope failure</i>	National Environment Strategy (2020)

Measures on Gender

Document	Measure	Highlights
National Gender Equality Policy	<ul style="list-style-type: none"> —Data repositories and data collection —Infrastructure improvements —Capacity building 	<p><i>Ensure and strengthen the collection and analysis of data disaggregated by sex, age and disabilities for evidence-based interventions to address gender equality issues</i></p> <p><i>Improve gender-friendly infrastructure and facilities in rural areas</i></p> <p><i>adequate financial and human resource to achieve gender equality; Mainstream gender in all disaster and climate change related initiatives</i></p>
Other Documents —Low Emission Development Strategy (LEDS) - Surface Transport —National Transport Policy 2017 - Policy Protocol Report —Second Nationally Determined Contribution	<ul style="list-style-type: none"> —Employment in transport, communication, and storage —General education and behavior change —Gender-related elements related to transport —Intelligent transport systems (ITS) —Development of climate change/ low carbon plan/ policy 	<p><i>Build women’s capacity to drive EV and give priority to female taxi drivers for subsidies on EV taxis</i></p> <p><i>There is a need for gender training, and for collection and use of gender-disaggregated data and gender analysis in transport polices</i></p> <p><i>Induce gender-friendly public transport services through an inclusive transport policy</i></p> <p><i>Strengthen and streamline women’s safety on the road.</i></p>

Electrification

Document	General e-mobility	EV charging infrastructure	EV manufacturing	Fiscal incentives	Ban of ICE sales
Bhutan Electric Vehicle Initiative	X	X	X	X	
Low Emission Development Strategy (LEDS) - Surface Transport	X	X		X	X
The Alternative Renewable Energy Policy 2013	X	X		X	
12th Five Year Plan 2018-23	X	X			
Bhutan. National communication (NC). NC 3.	X			X	
National Transport Policy 2017 - Policy Protocol Report	X			X	
Voluntary National Review 2021	X	X			
Second Nationally Determined Contribution	X				
Economic Development Policy (2016)	X				
Energy transition pathways for the 2030 ESCAP agenda : SDG 7 roadmap for Bhutan	X				
First Nationally Determined Contribution	X				
National Energy Efficiency & Conservation Policy of Bhutan	X				
National Environment Strategy (2020)	X				

Highlights

- Gradual phase out of ICE vehicles
- Bhutan Sustainable Low-Emission Urban Transport Systems project under implementation, to replace 300 Internal Combustion Engine Taxis with Electric Vehicles

Targets

- 100% taxi imports to be EVs by 2035
- 100% light vehicles and buses imports to be EVs by 2045
- 25% heavy vehicles (freight) imports to be EVs by 2050”
- 1 public charging point for 6 EVs by 2050

Public transport measures

BRT	Bus fleet renewal	Express lanes/ public transport priority	Public transit integration	Urban passenger rail infrastructure improvement	General public transport
<ul style="list-style-type: none"> —12th Five Year Plan 2018-23 —National Transport Policy 2017 - Policy Protocol Report —Second Nationally Determined Contribution 	<ul style="list-style-type: none"> —Bhutan transport 2040 Integrated strategic Vision —National Transport Policy 2017 - Policy Protocol Report 	<ul style="list-style-type: none"> —Low Emission Development Strategy (LEDS) - Surface Transport 	<ul style="list-style-type: none"> —Bhutan transport 2040 Integrated strategic Vision —National Transport Policy 2017 - Policy Protocol Report 	<ul style="list-style-type: none"> —Low Emission Development Strategy (LEDS) - Surface Transport —Second Nationally Determined Contribution —The Alternative Renewable Energy Policy 2013 	<ul style="list-style-type: none"> —12th Five Year Plan 2018-23 —Bhutan transport 2040 Integrated strategic Vision —Bhutan. National communication (NC). NC 3. —Economic Development Policy (2016) —First Nationally Determined Contribution —Low Emission Development Strategy (LEDS) - Surface Transport —National Energy Efficiency & Conservation Policy of Bhutan (Nov 2019) —National Environment Strategy (2020) —National Transport Policy 2017 - Policy Protocol Report —Second Nationally Determined Contribution —Voluntary National Review 2021
<ul style="list-style-type: none"> —PPP in Thimphu BRT to be pursued —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 —Mass transit though improvements in bus systems and the introduction of open-bus rapid transit (BRT) network 	<ul style="list-style-type: none"> —introduction of larger, more comfortable buses on major routes —Fleet expansion to address the current gap and the replacement requirements 	<ul style="list-style-type: none"> —Establish and enforce carpool lanes along major highways and main city streets 	<ul style="list-style-type: none"> —Provision of appropriate terminal facilities in major centers for bus and taxi services 	<ul style="list-style-type: none"> —LRT on Thimphu - Paro route —Passenger train on Thimphu-Phuentsholing route —Implement passenger trains on 97 km Thimphu-Phuentsholing route —Implement LRT between Thimphu-Chuzom-Paro 	<ul style="list-style-type: none"> —New public routes introduced with subsidies encouraging passenger transport services —Increase in public transport ridership —Provide Government subsidy for non-profitable routes: 3 M (RGoB) —Improve mass transit and develop financial products for promotion of private investment through concessions and Public Private Partnerships —Gravity Ropeways

Measures on walking and cycling

Measure	Highlights	Document
Active transport infrastructure expansion	<ul style="list-style-type: none"> —No car zone - cycle lanes in place and efficient public transport —Planning of pedestrian path and cycling lanes —>75% of urban road should be covered with dedicated NMT tracks —Construct min. 10 km of footpath every year —Construction of bicycle lanes and pedestrian walkways in Thimphu and Pheuntsholing —Bike-lanes shall be introduced in cities and towns 	<ul style="list-style-type: none"> —Bhutan. National communication (NC). NC 3. —Low Emission Development Strategy (LEDS) - Surface Transport —National Transport Policy 2017 - Policy Protocol Report —Second Nationally Determined Contribution —The Alternative Renewable Energy Policy 2013
Bike sharing	<ul style="list-style-type: none"> —Launch PBS system in Thimphu city 	<ul style="list-style-type: none"> —Low Emission Development Strategy (LEDS) - Surface Transport
Road space repurpose to allow access for other modes	<ul style="list-style-type: none"> —Better use of existing road space 	<ul style="list-style-type: none"> —Bhutan transport 2040 Integrated strategic Vision —National Transport Policy 2017 - Policy Protocol Report
General active mobility	<ul style="list-style-type: none"> —improvement of facilities for pedestrian —Promoting non-motorized transport and non-fossil fuel-powered transport —18,515 public bicycles by 2050 —1,850 docking stations by 2050 	<ul style="list-style-type: none"> —Bhutan transport 2040 Integrated strategic Vision —Bhutan. National communication (NC). NC 3. —Low Emission Development Strategy (LEDS) - Surface Transport —National Energy Efficiency & Conservation Policy of Bhutan (Nov 2019) —National Transport Policy 2017 - Policy Protocol Report

Freight and logistics measures

Measure	Document
<i>Improving efficiency in freight transport</i> <i>Expand use of more efficient and effective modes of cargo movement</i>	Bhutan. National communication (NC). NC 3.
<i>Develop inland container depots or dry ports including railway links</i>	Economic Development Policy (2016)
<i>Improving efficiency in freight transport</i>	First Nationally Determined Contribution
<i>Develop logistics policy</i>	Low Emission Development Strategy (LEDS) - Surface Transport
<i>Develop a city level freight delivery strategy</i>	
<i>Plan and implement more efficient and less intrusive freight delivery options</i>	
<i>Low emission freight transport system for heavy and commercial trucks and freight trains</i>	Second Nationally Determined Contribution
<i>Trade logistics infrastructures such as dry ports and warehouses</i>	Voluntary National Review 2021

Measures on aviation

Measures	Document
<p><i>Expansion of international links with other Asian hubs and regional centers</i></p> <p><i>Provision of air carrier services and airport facilities sufficient for growth targets</i></p> <p><i>Construction of airstrips in remote areas</i></p> <p><i>Provision of helicopter services for search and rescue, emergencies, and charter services</i></p> <p><i>Effective regulation and compliance with international safety and environmental standards</i></p> <p><i>Additional international airport to be developed as a second gateway into Bhutan</i></p> <p><i>Operational practices like weight-reduction measures and more efficient flight procedures and air-traffic control</i></p>	<p>National Transport Policy 2017 - Policy Protocol Report; Bhutan transport 2040 Integrated strategic Vision</p>
<p><i>Development of an Aviation Policy and Surface Transport Policy to improve connectivity and mobility, and to ensure inclusiveness</i></p>	<p>Voluntary National Review 2021</p>
<p><i>Up-gradation and enhancement with the modernization of security system</i></p> <p><i>Development and improvement of Aerodrome</i></p> <p><i>Expansion of Gelephu Airport</i></p>	<p>12th Five Year Plan 2018-23</p>
<p><i>The Royal Government shall give priority to the development of domestic and international air transport and airports</i></p>	<p>Economic Development Policy (2016)</p>

Vehicle standards

Measure	Document
Implement BS-VII/ Euro VII by 2026	Low Emission Development Strategy (LEDS) - Surface Transport
<i>Establishing modern testing facilities</i>	Bhutan transport 2040 Integrated strategic Vision
<i>Improving efficiency and emissions from existing vehicles through standards and capacity building</i>	Bhutan. National communication (NC). NC 3.; First Nationally Determined Contribution
<i>Adopt appropriate measures to promote the penetration of fuel-efficient vehicles</i>	National Energy Efficiency & Conservation Policy of Bhutan (Nov 2019)
<i>Increase from the current Euro 2 emission standard to Euro 4, and eventually Euro 6, in line with India's standards.</i>	National Environment Strategy (2020)
<i>Foster mandatory vehicle fuel efficiency or CO2 emission standards</i>	National Transport Policy 2017 - Policy Protocol Report
<i>Establishing automotive industry agreements on fuel efficiency and adaptation of efficient and innovative vehicle technology</i>	
<i>Implement fuel efficiency standards for heavy duty vehicles</i>	

Various other targets

Target	Year	Document
Remain carbon neutral		First Nationally Determined Contribution; Second Nationally Determined Contribution; The Climate Change Policy of the Kingdom of Bhutan 2020
<i>50% modal shift for short trips from light vehicle, 2-W and taxis to walking by 2040</i>	2040	Low Emission Development Strategy (LEDS) - Surface Transport
<i>Annual road fatality reduced to 8 per 10,000 vehicles</i>		12th Five Year Plan 2018-23
<i>1000 kilolitres of oil equivalent substituted with 111,000MWh</i>	2025	The Alternative Renewable Energy Policy 2013
<i>Cumulative mitigation potential of 5,283 Gg CO₂e with an overall total investment requirement of USD 3,233 million till 2030.</i>	2030	Second Nationally Determined Contribution

*“ATO translates data into insights,
policies, and investments”*

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