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

# Nepal



**Developed by:** 



Developed with the support of:







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Nepal, a country in the South Asia region, having Low and lower middle income status, was recorded to have a national population of about 31 million in the year 2024.

The urban population share in total is about 22%. The age wise distribution of the national population accounts for 36% and 9% of <18 years old (minors) and >60 years old (seniors) population, respectively. The GDP per capita (PPP) for the year 2022 was 4,727 USD.

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

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

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

#### Contents:

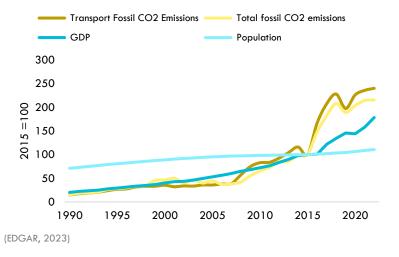
Executive Summary	3
Goal 1a — Low-Carbon (climate change mitigation)	4
Goal 1b — Resilience	6
Goal 1c – Air pollution	7
Goal 2 – Road safety	8
Goal 3 - Economic sustainability	9
Goal 4 - Rural access	11
Goal 5 - Urban access	12
Goal 6 - National access and connectivity	13
Transport Policy Insights and relevant sample projects	14

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

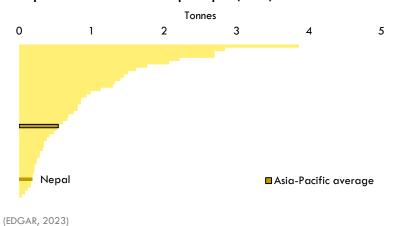
By 2030, aim to peak transport CO2 emissions and initiate reductions in transport related CO2 emissions with the intention to move towards decarbonization of the transport sector by 2050, or shortly thereafter (Based on SDG 7.2, 9.1, 13.2, Paris Agreement)

#### Transport CO2 emissions (fossil)

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

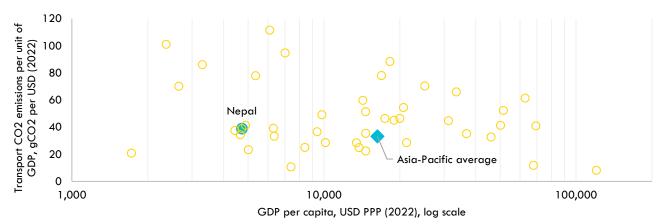


#### Transport fossil CO2 emissions per capita (2022)



- Nepal, with a population of 31 million and an urban population share of 22%, has seen a rapid increase in transport fossil CO2 emissions between 2015 and 2022, averaging 13% annually. This is significantly higher than the Asia-Pacific average of 1%.
- Transport CO2 emissions per capita in Nepal are 0.2 tonnes, lower than the Asia-Pacific average of 0.5 tonnes. However, the transport CO2 emissions intensity (emissions per unit of GDP) is higher in Nepal at 39.0 compared to the regional average of 33.2.
- The share of transport in total CO2 emissions has increased from 32% to 36% between 2015 and 2022.
- Road transport dominates CO2 emissions, contributing 99% of the total.
- The average annual change in road transport fossil CO2 emissions was 18% between 2015 and 2022, with LDVs accounting for 55% of road transport emissions in 2022.

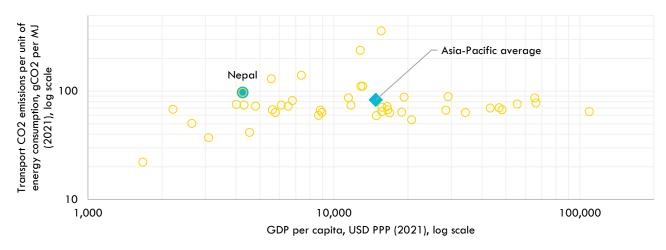
#### Transport CO2 emissions per unit of GDP (2022)



(EDGAR, 2023)

#### Transport energy consumption

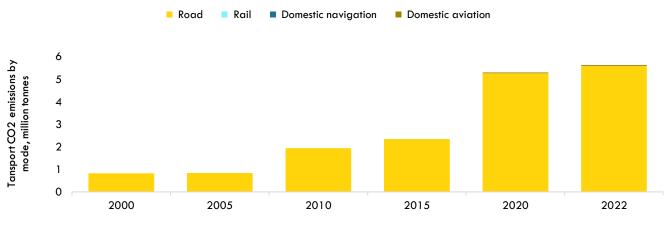
#### Transport CO2 emissions per unit of energy consumption and GDP per capita (2021)



(EDGAR, 2023)

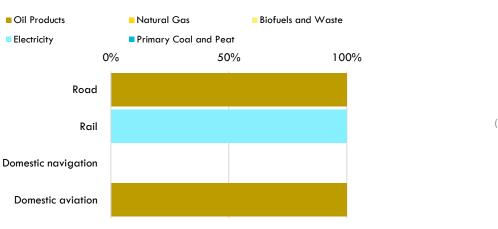
#### Transport CO2 emissions (fossil) and energy consumption modeshare

#### Growth of transport CO<sub>2</sub> emissions by mode



(EDGAR, 2023)

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



(EDGAR, 2023)

Share of transport in renewable energy

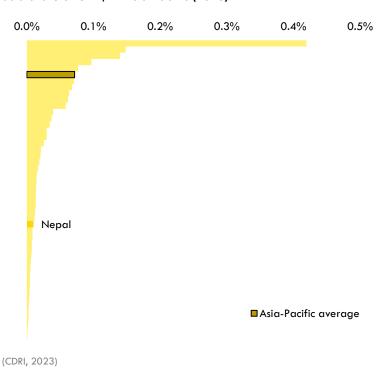
consumption:

#### Goal 1b - Resilience:

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

# Estimated average annual losses to transport infrastructure due to hazards

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

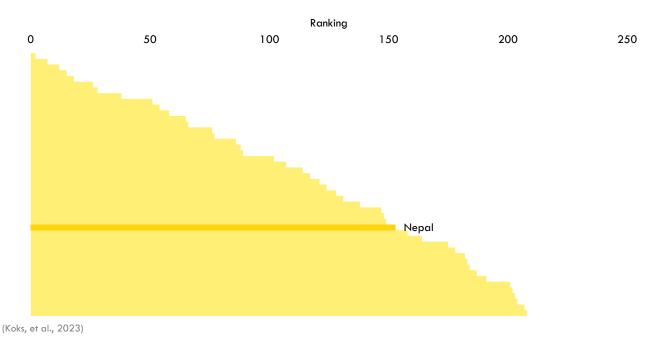


- Road infrastructure is most vulnerable to hazards, accounting for 96% of average annual losses.
- Nepal ranks 153rd out of 208 countries in the National Road Vulnerability Index, indicating a relatively high risk of disruptions to trips after climate hazards.

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

#### Climate change vulnerability

National road vulnerability index (NRVI) ranking (2023)

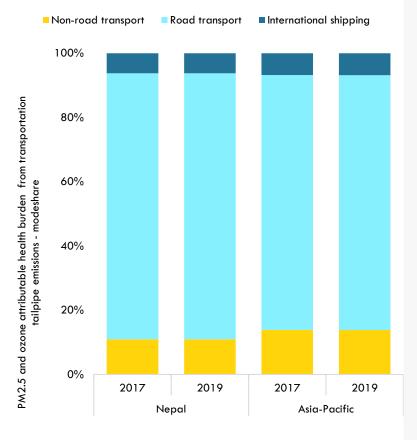


#### Goal 1c - Air pollution:

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

#### Transport air pollution health impact

#### Transport air pollution health impact (PM 2.5)

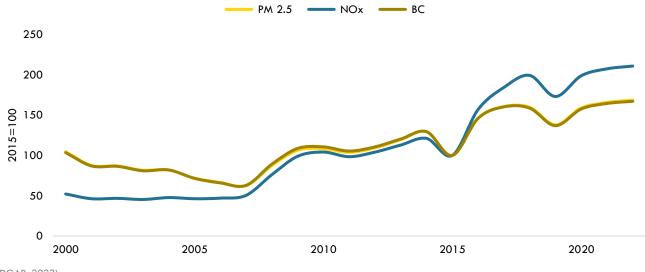


- PM2.5, NOx, SOx, and BC emissions from road transport have increased between 2015 and 2022, despite GDP growth. This contrasts with the Asia-Pacific region, which saw decreases in these emissions.
- Road transport contributes significantly to economy-wide air pollutant emissions, particularly for NOx and BC.
- Estimated deaths due to PM2.5 and ozone pollution from transport increased from 1,018 to 1,128 between 2017 and 2019.
- In Nepal, the total attributable deaths due to the PM2.5 and ozone air pollution from the transport sector changed from 1,018 to 1,128 between 2017 to 2019.
- The numbers for Asia-Pacific were about 236 thousand and 253 thousand, respectively, for the same time period.

(McDuffie et al., 2021)

#### Transport air pollutant emissions

#### Growth of road transport air pollutant emissions

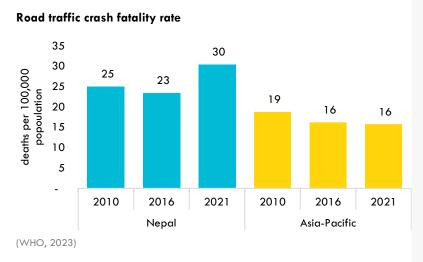


(EDGAR, 2023)

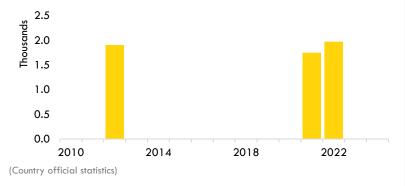
#### Goal 2 - Road safety:

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

#### Road traffic crash fatalities



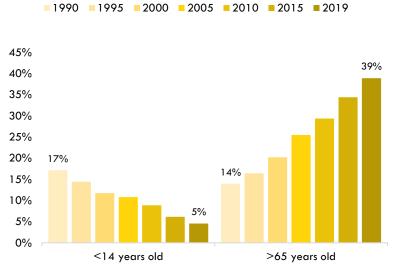
#### Road traffic crash fatalities (absolute values)



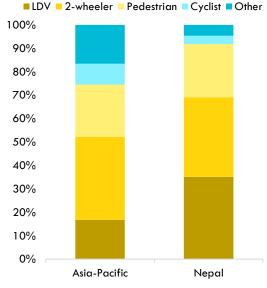
- Estimated road traffic fatalities vary depending on the source, but all indicate a high fatality rate compared to the Asia-Pacific average.
- The economic cost of fatalities and serious injuries is substantial, estimated at 3 billion USD or 7% of Nepal's GDP in 2021.
- Vulnerable road users, including minors, seniors, females, pedestrians, and bicyclists, are disproportionately affected by road crashes.
- Road infrastructure safety for pedestrians and bicyclists needs improvement, with only 17% and 32% of roads meeting 3-star or better standards, respectively.

#### Share of vulnerable groups

#### Share of road crash fatalities by age



#### Share of road crash fatalities by mode

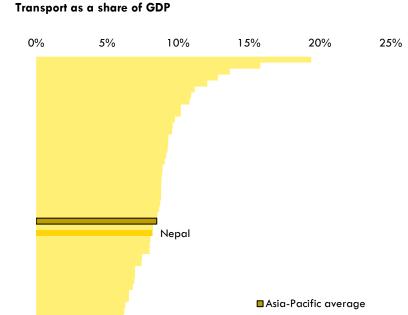


(GBD, 2021) (WHO, 2023)

#### Goal 3 - Economic sustainability:

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

#### **Transport sector and GDP**

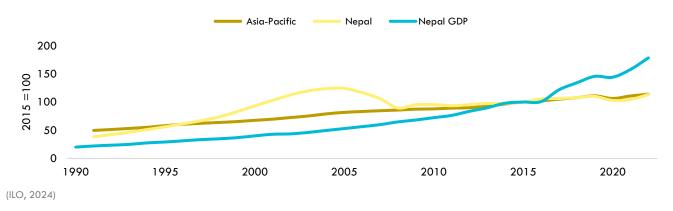


- The transport sector's contribution to GDP and employment has remained relatively stable.
- Official Development Assistance (ODA) and Public Private Partnership (PPP) investments have focused primarily on the road subsector.
- Nepal's logistics performance has improved, but there is room for further progress in sustainable freight transport.

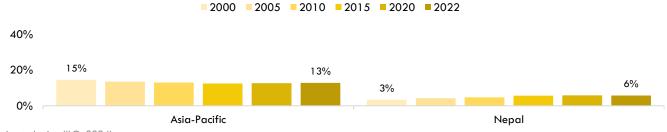
#### Transport employment

(UN, 2023)

#### Growth of transport sector employment



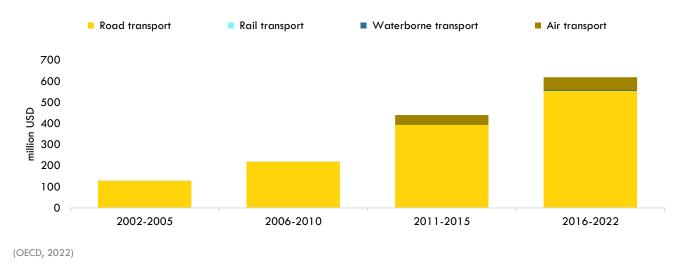
#### Female share in the transport employment



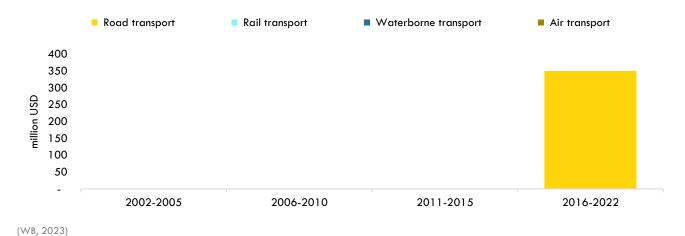
Estimated using (ILO, 2024)

#### **Transport investments**

#### Official development assistance for Transport



#### **Public Private Partnership in Transport**



#### Freight sector

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

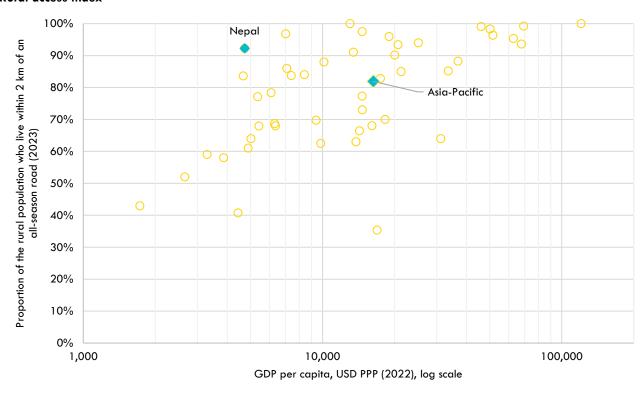
(Data not available)

#### Goal 4 - Rural access:

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

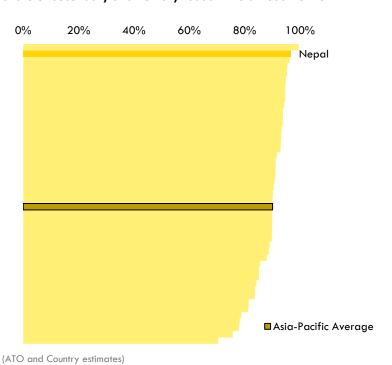
#### Rural access

#### Rural access index



(CIESIN-rural, 2023)

#### Share of Secondary and Tertiary roads in Total road network



- Nepal has made significant progress in rural access, with 92% of the rural population living within 2km of an allweather road.
- However, an estimated 2 million people still lack decent rural access.

#### Goal 5 - Urban access:

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

#### Urban rapid transit infrastructure

Rapid transit infrastructure to resident ratio (RTR)

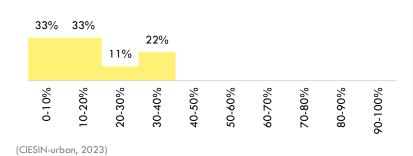
(Data not available)

#### Urban rapid transit infrastructure length

(Data not available)

#### **Urban** access

Share of cities by level of urban access (out of 9 cities)



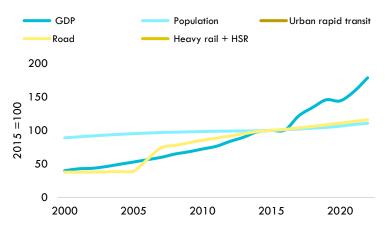
• Data on urban access to public transport is limited, but available information suggests room for improvement.

#### Goal 6 - National access and connectivity:

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

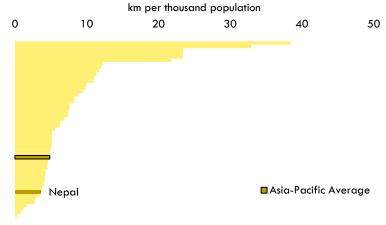
#### Transport infrastructure

#### Growth of transport infrastructure



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

#### Road transport infrastructure availability (2022)



(IRF, 2024) (ATO and Country estimates)

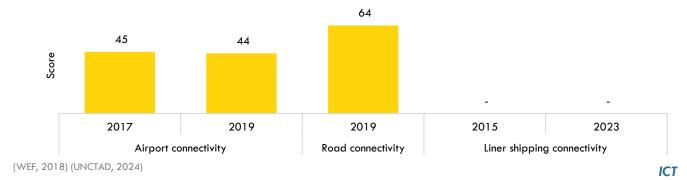
#### Rail transport infrastructure (including HSR) availability (2021)

(Data not available)

- Road infrastructure has expanded, but heavy rail infrastructure is lacking.
- Bus motorization remains low.
- Airport connectivity has slightly decreased.
- Telecommunication infrastructure and internet usage have improved significantly.

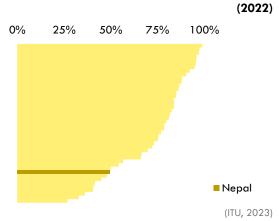
#### **Transport connectivity**

#### **Transport connectivity**



#### Container port traffic (TEU)

#### Percentage of individuals using the internet



(Data not available)

#### **Transport Policy insights:**

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

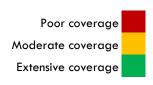
- Nepal has adopted 13 policy documents related to sustainable transport since 2015, with a focus on low-carbon transport and air pollution.
- More policy attention is needed on road safety, economic sustainability, rural and urban access, and national connectivity.

#### Transport relevant policy documents

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

Doc. No.	Document Name	Year	Goal 1a	Goal 1b	Goal 1c	Goal 2	Goal 3	Goal 4	Goal 5	Goal 6
1	National Sustainable Transport Strategy (NSTS) for Nepal (2015-2040)	2015								
2	Nepal Civil Aviation Act, 2073	2017								
3	National Review of Sustainable Development Goals	2017								
4	National Action Plan for Electric Mobility	2018								
5	Nepal Urban Road Standard- 2076	2019								
6	The Fifteenth Plan (Fiscal Year 2019/20 – 2023/24)	2020								
7	Second Nationally Determined Contribution	2020								
8	National Adaptation Plan (NAP) 2021 - 2050	2021								
9	Assessment of Electric Mobility Targets for Nepal's 2020 Nationally Determined Contributions (NDC)	2021								
10	Nepal LTS	2021								
11	Nepal Road Safety Action Plan (2021-2030)	2022								
12	National Implementation Plan for Climate Change Mitigation and Adaptation (2080-2087)	2023								
13	Strategy and Initiatives for Electrification of Public Transportation in Nepal	n.d.								

(ATO National policy tracker)



#### Transport relevant national targets

Doc. No.	Target	Year	Goal 1a	Goal 1b	Goal 1c	Goal 2	Goal 3	Goal 4	Goal 5	Goal 6
7	Second Nationally Determined Contribution									
	Sales of electric vehicles (e-vehicles) in 2025 will be 25% of all private passenger vehicles sales, including two-wheelers and 20% of all four-wheeler public passenger vehicle sales (this public passenger target does not take into account electricrickshaws and electrictempos) in 2025.	2025	x		х					>
	By 2030, increase sales of e-vehicles to cover 90% of all private passenger vehicle sales, including two-wheelers and 60% of all four-wheeler public passenger vehicle sales (the public passenger target does not take into account electric-rickshaws and electric-tempos).	2030	х		x					×
	By 2025, ensure at least three provinces operate electric public transport,	2025	x		х	х			х	
	By 2030, develop 200 km of the electric rail network to support public commuting and mass transportation of goods.	2030	х		х					×
6	The Fifteenth Plan (Fiscal Year 2019/20 – 2023/24)									
	Families with access to transportation within the distance of 30 minutes = 95 (baseline = 82 (2018/19))	2024	x		х	х				>
	Transportation, storage and communication Gross Domestic Product and sector-wise value addition target (ln 10 million rupees) = $37,122$ (baseline $2018/19 = 22,135$ ) Economic growth rate and sector-wise value addition target = $10.8\%$ (baseline $2018/19 = 5.9\%$ ) Sectorwise contribution to the gross domestic product = $7.7\%$ (baseline $2018/19 = 7.2\%$ ) Incremental capital-output ratio and total investment (At the constant prices of FY $2018/19$ ) (In $10$ million rupees) = $45740$	2024	x	x	x	x	x			)
	Ratio of renewable energy in total energy consumption = $12\%$ (baseline $2018/19 = 7\%$ )	2024	х		х					
	Road density = $0.74$ km/sqkm (baseline = $0.55$ (2018/19)) National and provincial highways (up to 2 lanes) (*Only blacktopped roads) = $20,200$ km (baseline = $7,794$ (2018/19)) National highways (above 2 lanes, including fast tracks) = $1174$ km (baseline = $96$ (2018/19)) Railways = $348$ km (baseline = $42$ (2018/19))	2024	x							>
9	Assessment of Electric Mobility Targets for Nepal's 2020 Nationally Determined Contributions (NDC)									
	Remove all petroleum-powered vehicles from four urban centres (Kathmandu Valley, Chitwan, Hetauda and Kavre) by 2028. (Bagmati Province Periodic Plan)	2028	x		х					
	By 2050, Nepal will decrease its dependency on fossils in the transport sector by 50%. (NDC)	2050	х		х					
	7.3.1: Share of EV in public transport systems 2025: 35% (SDG Targets & indicators)	2025	x		х					>

	7.3.1: Share of EV in public transport systems 2030: 50% (SDG Targets & indicators) By 2030, increase sales of e-vehicles to cover 90% of all private passenger vehicle sales including two-wheelers and 60% of all four-wheeler public passenger vehicle sales (this public passengertarget does nottake into account electric-rickshaws and electric-tempos) (NDC)	2030	X		x		X
	By 2030, develop 200 km of the electric rail network to support public commuting and mass transportation of goods. (NDC)	2030	х	х	х		х
10	Nepal LTS						
	: i) In 2025, electric vehicles (e-vehicles) will account for 25 per cent of all private passenger vehicle sales (including two-wheelers) and 20 per cent of all fourwheeler public passenger vehicle sales (excluding electric rickshaws and electric three-wheelers) (Second NDC)	2025	x		х		х
	Increase e-vehicle sales to 90 percent of all private passenger vehicle sales (including two-wheelers) and 60 percent of all four-wheeler public passenger vehicle sales by 2030. (excluding electric-rickshaws and electric threewheelers). (Second NDC)	2025	х		х		x
	iii) Develop a 200-kilometer electric rail network by 2030 to support public transportation and mass transportation of goods. (Second NDC)	2030	x		х		х
12	National Implementation Plan for Climate Change Mitigation and Adaptation (2080-2087)						
	• By 2025, 25% of the total domestic passenger vehicle sales will be due to electric passenger vehicles. Share of sales to tri-electric public transport vehicles in total: Sales to public transport vehicles to be 20 percent (electric rickshaws and tri-electric tempos are included in target volume of sales to public transport vehicles)	2025	x		х		x

(ATO National policy tracker)

#### Transport relevant sample projects:

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

#### Transport relevant projects

Year	Project name	Amount (million USD)	Goal 1a	Goal 1b	Goal 1c	Goal 2	Goal 3	Goal 4	Goal 5	Goal 6
2024	Provincial and Local Roads Improvement Program - Phase 1	100		х		х	х	х		х
2023	South Asia Subregional Economic Cooperation Highway Enhancement Project (Kakarbhitta-Laukahi)	301		х			х	х		х
2023	Urban Resilience and Livability Improvement Project	166		х		х	х		х	
2024	NEPAL GREEN, RESILIENT AND INCLUSIVE PROGRAMMATIC DPC 2	100	х	х	х		х			
2022	First Nepal Green, Resilient and Inclusive Programmatic DPC	100	х	х	х		х			
2022	Accelerating Transport and Trade Connectivity in Eastern South Asia — Nepal Phase 1 Project	275		х			х	х		х
2021	Master Plan for Road Connectivity	2		х			х			х

(MDB Projects database)

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