Regional Overviews: Trends and Policy Development

SLOCAT Partnership on Sustainable, Low Carbon Transport

TRANSPORT, CLIMATE AND SUSTAINABILITY GLOBAL STATUS REPORT

4TH EDITION

MODULE 3

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Africa Regional Overview

THIS CHAPTER IS SUPPORTED BY
VREF

DEMOGRAPHICS, TRANSPORT AND SUSTAINABILITY DATA

Indicators	Africa	Global
Population size (2023)	1,461 million	8,000 million
Population growth (2015-2023)	21.5%	8.5%
Urban population share (2023)	44.5%	57%
Urban population growth (2015-2023)	32.7%	16%
GDP per capita (2023)	USD 1,994 (constant 2015 USD)	USD 11,337 (constant 2015 USD)
GDP growth (2015-2023)	22%	22.8%
Share of women employed in transport and storage (2023)	6.5%	15.6%
Motorisation rate (2022)	51.2 vehicles per 1,000 people	218.7 vehicles per 1,000 people
Share of urban population with convenient access to public transport (2020)	31.5%	52%
Share of rural population with access to all-weather primary and secondary roads (2020)	31.3%	38%
Transport total GHG emissions (2023)	375 million tonnes CO_2eq	7,123 million tonnes CO_2eq
Per capita transport GHG emissions (2023)	0.26 tonnes CO_2eq	0.89 tonnes CO_2eq
Fossil fuel subsidies (explicit and implicit) (2023)	USD 199 per capita (constant 2021 USD)	USD 813 per capita (constant 2021 USD)
Share of renewable energy sources in transport (2023)	0.15% (2021)	4.6%
Carbon intensity of electricity generation (2023)	430 gCO_2/kWh	417 gCO_2/kWh
Transport contribution to air pollution (2019)	3.2%	6%
Premature deaths attributable to air pollution by transport (2019)	1.0 per 100,000 people	2.3 per 100,000 people
Road casualties (2021)	18.8 per 100,000 people	15.0 per 100,000 people

Source: See endnote 1 for this section.

Cover Photo: Carlos Felipe Pardo
Photo: Carlos Felipe Pardo

KEY FINDINGS

Demand, use and access

- Across Africa, demographic shifts such as rising populations and rapid urbanisation – as well as modest economic growth – have markedly expanded mobility needs and reshaped travel patterns, increasing the need for more efficient, inclusive, safer and sustainable transport.
- The transport sector is pivotal to the region's economic growth, development and regional integration, and its contribution to GDP remains significant, although it varies across countries.
- The transport sector employed an estimated 23 million people (around 5% of Africa's workforce) in 2023, with the bulk of these jobs concentrated in informal transport. While informal transport in the combination with walking and public transport moves 80 to 90% of commuters in many African cities, the sector faces safety issues, instability and personal security (especially for women).
- Although road transport remains the dominant mode of motorised transport in Africa, only around half of the region's roads were paved as of 2014.
- On average, only a third (31%) of Africa's rural population had access to all-weather roads in 2019, limiting people's access to basic services (such as education and health care) and constraining connectivity to economic opportunities.
- Progress in expanding and modernising road infrastructure has been uneven. Between 2004 and 2022, nearly 18,000 kilometres of climate-resilient regional highways were added along 25 road corridors, as well as 27 one-stop border stations. However, poor road maintenance due to underfunding and inefficient execution undermines the benefits of infrastructure investments and contributes to rapid deterioration.
- Investing in road infrastructure improvements is critical to reduce transport costs (which make up an estimated 40% of the final price of goods in Africa), speed the movement of goods and people, and improve overall transport efficiency. Yet Sub-Saharan Africa has been spending only around half of the estimated 7.1% of its GDP required annually to close its infrastructure gap by 2030.
- Freight transport has continued to expand in the region, with the volume of goods carried in Africa's freight forwarding market projected to reach 1.66 trillion tonne-kilometres in 2025. Container port traffic in the region grew 6.9% between 2015 and 2023, to 30.2 million twenty-foot equivalent units (TEU).
- Road freight transport carried up to 80% of total goods in Africa in 2014, placing significant pressure on the road network and reflecting the limited reach and capacity of the region's rail systems, as well as the high costs of air transport.

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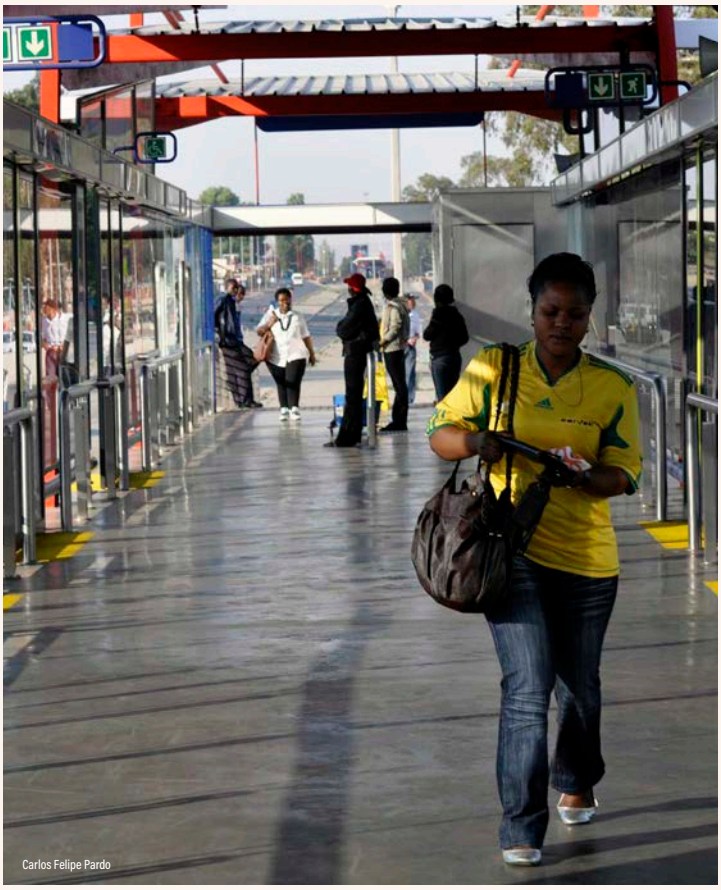
KEY FINDINGS

- Even so, recent progress has been made in railway development across East and West Africa and in southern Africa.
- Road transport remains the main mode of transport for people in Africa, accounting for 90% of the region's passenger travel activity in 2014.
- Walking is by far the most common travel mode – either in itself or in combination with public transport – accounting for 50-90% of daily trips in many African cities as of 2021. Yet most African cities are not walkable.
- Despite the high modal share of collective transport in Africa, these systems have remained severely underdeveloped in many countries, often characterised by deep fragmentation, informal operations and weak regulatory oversight.
- Several African countries have made strides towards modernising and decarbonising public transport by introducing bus rapid transit (Senegal and Tanzania) and undertaking institutional reforms to strengthen governance (Kenya and Nigeria).
- In the absence of efficient, well-integrated public transport systems in many African cities, the region's rapidly expanding middle class has turned increasingly to private car ownership.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- Africa's motorisation rate (covering four-wheeled motorised vehicles), at 51 vehicles per 1,000 people in 2022, remained well below the world average of 218 vehicles per 1,000 people. However, it is increasing rapidly, rising 34% between 2017 and 2022 due to rapid urbanisation and rising household incomes. More than three-quarters of the region's 72 million vehicles in use are concentrated in just 10 countries.
- More than 85% of vehicles in Africa in 2020 were used vehicles imported from Europe, the United States, and Japan, which typically fail safety and emission standards in their home countries.
- As of 2019, over 80% of the region's road vehicles fell below the Euro 4 vehicle emission standards while also lacking valid roadworthiness.
- Domestic motor vehicle production in Africa rebounded 16% (well above the global rate of 3%) in 2021, after slumping in the early years of the COVID-19 pandemic; however, the region represented only 1.2% of total global vehicle production in 2023.
- Vehicle production in Africa is concentrated in Algeria, Egypt, Morocco, and South Africa, while a handful of other countries – such as Angola, Ethiopia and Ghana – have vehicle assembly plants.
- The rise in motorcycle use across Africa underscores growing mobility needs for both personal and commercial use, as well as the continued challenges posed by inadequate and unreliable public transport.
- Electric vehicles had a very minor presence in Africa in 2024, with the region's 15,000 electric cars comprising only 0.05% of the total car fleet, and its 25,000 electric motorised two- and three-wheelers having only a 0.13% fleet share.
- The market for electric vehicles in Africa could reach USD 21.4 billion by 2027, driven by projected growth in the market for electric two- and three-wheelers from USD 3.65 billion in 2021 to USD 5.07 billion in 2027. Electric two- and three-wheelers could account for 50-70% of the region's total electric vehicle sales by 2040.
- Africa holds vast reserves of critical minerals essential for electric vehicle manufacturing and supporting the global energy transition.

KEY FINDINGS

Sustainability and climate trends

- In 2023, Africa was home to nearly one-fifth (18%) of the world's population, yet it contributed only 6.2% of global greenhouse gas emissions and 5.3% of global transport greenhouse gas emissions (excluding international aviation and shipping).
- The region's transport emissions grew 0.1% in 2023 to reach 375 million tonnes of CO_2 equivalent.
- Although Africa had the second lowest transport emissions among global regions in 2023 (after Oceania), they increased 10.3% between 2015 and 2023, the second highest growth rate after Asia (19%).
- The distribution of emissions across Africa is highly uneven, with the top four emitting countries – Nigeria, Egypt, South Africa and Algeria – responsible for more than half (56%) of the region's transport greenhouse gas emissions in 2023.
- Africa's per capita transport greenhouse gas emissions remained the lowest globally in 2023, at only 0.26 tonnes of CO_2 equivalent per person, well below the global average of 0.89 tonnes of CO_2 equivalent per person.
- In 2021, surface transport (road, rail and inland waterways) accounted for 98% of the region's transport greenhouse gas emissions.
- Africa's transport emissions relative to economic output fell 2.3% in 2023 to reach 1.29 tonnes of CO_2 equivalent per USD 10,000, but this was still the highest level among global regions.
- Reliance on private road transport has led to high levels of traffic congestion in many African cities.
- The average carbon intensity of electricity generation in Africa in 2023 was 430 grams of CO_2 equivalent per kilowatt-hour (kWh), close to the global average of 417 grams of CO_2 equivalent per kWh. Many of the African countries with high transport greenhouse gas emissions have very low shares of renewable energy in their total transport energy consumption, constraining a key benefit of transport electrification.
- Transport contributed 3.2% of the region's total air pollution in 2019, leading to 1.01 premature deaths per 100,000 people in 2019; this was well below the global average of 6% and 2.3 deaths per 100,000 people.
- Despite low motorisation, Africa experiences relatively high road fatality rates due to the gap in safe infrastructure – with an average of 18.8 casualties per 100,000 people in 2021 – making it home to the world's most dangerous roads. More than half of road traffic deaths in the region involve vulnerable road users such as pedestrians, cyclists and motorcyclists.
- Despite contributing the second least to global greenhouse gas emissions, Africa is among the most vulnerable regions to the impacts of climate change. The region loses an estimated USD 7-15 billion annually due to the devastating effects of climate change, a figure that could rise to USD 50 billion by 2030, representing up to 7% of Africa's GDP on average.

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KEY FINDINGS

Policy and investment developments

- Although Africa's shift to electric mobility has lagged, more governments have become aware of the detrimental impacts of fossil fuel-powered vehicles and have implemented policies and fiscal incentives to promote the uptake of electric vehicles.
- More African countries also joined global initiatives to phase out fossil fuel-powered vehicles.
- As of 25 May 2025, five African countries – Botswana, Lesotho, Kenya, Zambia and Zimbabwe – had submitted to the United Nations their third-generation Nationally Determined Contributions (NDCs) towards reducing emissions under the Paris Agreement.
- Among Africa's second-generation NDCs (2019-2024), 11 countries (or 34% of the total submissions) included specific targets for reducing transport-related greenhouse gas emissions.
- As of 25 May 2025, 10 African countries (out of 76 total submissions) had submitted to the United Nations their LT-LEDS (Long-Term Low Emissions Development Strategies), indicating stronger national commitment to reducing transport greenhouse gas emissions, facilitating the shift to more sustainable modes and increasing alignment with the Paris Agreement.
- During the 2023-2024 period, five African countries – Burundi, Morocco, Mozambique, Zambia and Zimbabwe – submitted National Adaptation Plans (NAPs) to enhance their transport adaptation and resilience efforts.
- In 2023, fossil fuel subsidies in Africa totalled USD 199 per capita, the lowest level among regions and less than a fourth of the global average of USD 813 per capita. However, the region's fossil fuel subsidies are projected to increase around 45% between 2023 and 2030, further undermining climate and sustainability efforts.
- Renewables represented only 0.15% of Africa's total final energy consumption in transport in 2021. However, countries have made strides to harness the region's great potential for renewable energy.
- Developments in freight transport policy have advanced in the context of improving intra-Africa trade and operationalising the African Continental Free Trade Area (AfCFTA).
- More African countries have recognised the importance of enhancing walking, cycling and public transport for improved urban mobility.
- Several African countries have taken significant steps to address road safety challenges through a combination of policy and innovative, context-specific initiatives.
- The region faces a major gap in infrastructure investment, with average annual investment in 2022 totalling around USD 80 billion, well below the required USD 130 to 170 billion per year. Transport infrastructure alone requires USD 35 to 47 billion per year.

Context, challenges and opportunities

Africa's transport sector is central to achieving economic growth, social inclusion, and regional integration, yet it continues to face significant challenges due to limited infrastructure, weak governance and climate vulnerability. However, growing and promising advancements have been made in transport infrastructure development, institutional set-up, policy, and investment, as well as a continuing acknowledgement of the role of sustainable transport in regional development. Transport is a critical pillar of Africa's economy, supporting the mobility needs of 1.4 billion people and facilitating trade across a rapidly urbanising continent.[2]

In 2023, Africa contributed only 5.3% of global transport greenhouse gas emissions (excluding international aviation and shipping), mainly from fossil fuel-powered road transport.[3] Despite this modest contribution to global emissions, the region remains highly vulnerable to the adverse effects of climate change.[4]

Passenger transport in many parts of Africa is characterised by high levels of public and collective transport use, and walking. Studies indicate that walking is the primary mode of passenger transport, either in combination with public transport or as a main mode of transport.[5] In many African cities – such as Dakar (Senegal), Casablanca (Morocco), Dire Dawa (Ethiopia), Maputo (Mozambique) and Douala (Cameroon) – the combination of walking, public transport and informal transport (in some cases termed as paratransit or popular transport) moves up to more than 80% of commuters (in some cases up to 90%).[6] Although most public transport users are captive users in the region, this trend presents an opportunity to diverge from unsustainable car-centric transport development, by prioritising investment in clean and equitable transport systems.

This reality is not yet being leveraged. In 2020, only 31.5% of Africa's urban population on average had convenient access to public transport, compared to 52% globally.[7] To some extent, this highlights limited service provision across the region; however, the data also may not fully cover informal public transport services (along non-fixed routes and stops) due to nascent mapping efforts. Investment in high-quality walking and cycling infrastructure has lagged, and pedestrians constitute a large share of road fatalities. Less than 10% of roads in Sub-Saharan Africa have pedestrian facilities (such as sidewalks and footbridges).[8]

The region's demand for freight transport is expected to surge, with the forthcoming African Continental Free Trade Agreement (AfCFTA) projected to increase intra-Africa trade up to 28%, and demand for maritime freight 62%, by 2030.[9] Maritime transport is the region's main facilitator of international trade, whereas road transport dominates freight transport within Africa, due to limited railway infrastructure.[10] Port infrastructure was seen as "below average" quality from 2007 to 2017.[11]

Although data on Africa's freight transport activity are limited, maritime transport data indicate a 6.9% increase in container port traffic between 2015 and 2023.[12] This trend, alongside broader increases in intra-African trade flows, suggests a rising need to scale up sustainable freight transport solutions. Doing so will be critical not only for supporting economic growth, but also for mitigating the negative environmental and social impacts of rising transport activity. However, sustainable freight transport solutions/interventions are stifled by challenges such as diverse geographical landscapes, varying levels of economic development, and a mix of formal and informal activity within the sector.[13]

The increasing number and intensity of extreme weather events and related fatalities in Africa since 2023 points to the need to improve resilience and adaptation to climate change. Transforming transport infrastructure – across road, rail, maritime and air – to minimise damages and losses is critical. Severe flooding in Mozambique has destroyed roads and bridges; storms in Nigeria threaten to erode port infrastructure; and rail networks in Zambia and Tanzania have suffered disruptions from washouts and landslides.[14] Such events highlight the urgent need for climate-resilient infrastructure across all modes, although a lack of access to climate finance hampers these developments.

Critically, Africa faces governance and institutional capacity challenges, including staffing shortages, technical expertise gaps and lack of political will. The governance structure for providing urban mobility services in many African countries, especially in highly informal environments, is characterised by overlapping mandates and poor interagency co-ordination, which lead to duplicated efforts that hinder effective transport planning.[15]

Demand, use and access

Across Africa, demographic shifts such as rising populations and rapid urbanisation – as well as modest economic growth – have markedly expanded mobility needs and reshaped travel patterns, increasing the need for more efficient, inclusive, safer and sustainable transport. Between 2015 and 2023, the region's population grew 21.5%, to 1.46 billion people.[16] This rapid growth was accompanied by a surge in urbanisation, with the share of people living in the region's cities growing 32.7% over this period.[17] Africa's urban population share was around 44.5% in 2023 and could reach 65% by 2050.[18] Meanwhile, the region's gross domestic product (GDP) grew 3.1% on average between 2011 and 2020,

outpacing the global average of 2.4%.[19] In 2023, it grew 3.2%, above the global average of 2.8%.[20]

The transport sector is pivotal to the region's economic growth, development and regional integration, and its contribution to GDP remains significant, although it varies across countries. In South Africa, the transport sector contributed 6.5% of GDP in 2022, in Kenya it contributed 8.1% of GDP in the first quarter of 2022, and in Côte d'Ivoire it accounted for 9.3% of GDP in 2019.[21]

The transport sector employed an estimated 23 million people (around 5% of Africa's workforce) in 2023, with the bulk of these jobs concentrated in informal transport. While informal transport in the combination with walking and public transport moves 80 to 90% of commuters in many African cities, the sector faces safety issues, instability and personal security (especially for women). [22] Women accounted for only 6.5% of employment in the region's transport and storage sector in 2023, down from 8.2% in 2015.[23] Labour impact assessments across African countries indicate that while informal transport workers support the provision of opportunities for work, the sector faces many challenges including insecure and precarious work with little to no social protection, extreme working hours, high levels of crime, poor working environments, and widespread discrimination and sexual harassment against women.[24]

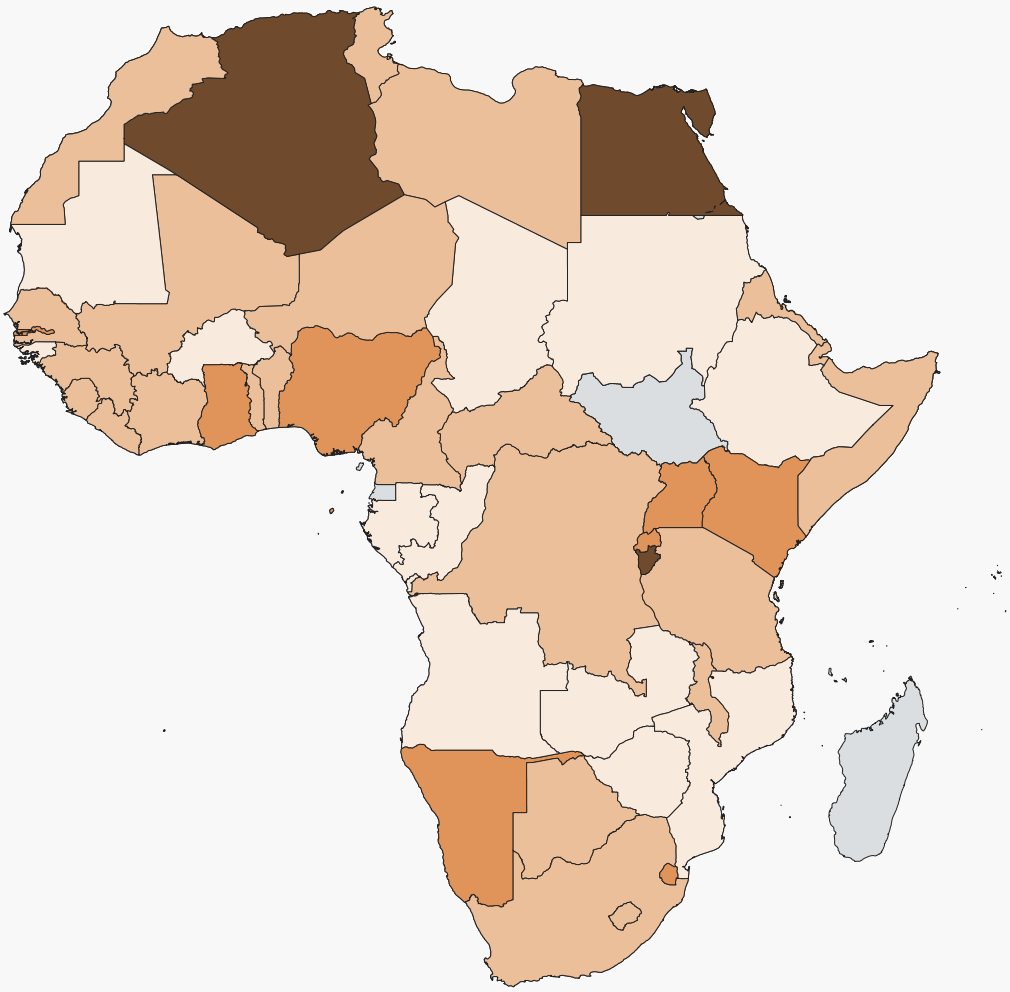
- In Zambia, the transport sector contributed 5.3% of total employment in 2022; the vast majority (95%) of transport workers were male, and nearly three-quarters worked in the informal economy.[25]
- In Kampala (Uganda), paratransit services employed an estimated 100,000 people in 2021, and in Lagos (Nigeria) the figure was as high as 500,000 in 2021.[26] Paratransit services, in the context of Sub-Saharan Africa, are characterised by different levels of business formality, competition regulation, and service planning. Whereas business formality ranges from informal to formal registered businesses, their level of competition regulation typically ranges from unregulated open markets to some level of regulation, and service planning ranges between flexible routes and service frequencies and fixed routes and schedules/headways.[27]

To address the gender imbalance in transport employment, the World Bank recommends adopting targets for women's participation in technical and managerial roles in the sector and monitoring progress; addressing legislative barriers and gaps that hinder women's employment and progression in the sector; and strengthening recruitment processes to eliminate gender bias.[28]

Overall, challenges limiting the efficiency and competitiveness of Africa's transport sector include poor inland road quality, inefficient port and border operations, inadequate rail capacity, limited multi-modal infrastructure, political and security instability, and slow technology innovation and adoption.[29]

Although road transport remains the dominant mode of motorised transport in Africa, only around half of the region's roads were paved as of 2014.[30] On average, only a third (31%) of Africa's rural population had access to

FIGURE 1. Access to all-weather roads in Africa, 2019



Source: See endnote 32 for this section.

all-weather roads in 2019, limiting people's access to basic services (such as education and health care) and constraining connectivity to economic opportunities.[31] Access to regional road networks is uneven, with the share of the rural population having access to an all-weather road in 2019 ranging from as low as 9% in Mauritania and 11% in Sudan, to 65% in Burundi, 73% in Algeria and 79% in Egypt (Figure 1).[32]

Progress in expanding and modernising road infrastructure has been uneven. Between 2004 and 2022, nearly 18,000 kilometres of climate-resilient regional highways were added along 25 road corridors, as well as 27 one-stop border stations, with support from the African Development Bank.[33] **However, poor road maintenance due to underfunding and inefficient execution undermines the benefits of infrastructure investments and contributes to rapid deterioration.** In many countries, the road network suffers from vehicle overloading, causing surfaces to prematurely degrade and resulting in reduced construction life span and high maintenance cost.[34]

Investing in road infrastructure improvements is critical to reduce transport costs (which make up an estimated 40% of the final price of goods in Africa), speed the movement of goods and people, and improve overall transport efficiency.[35] **Yet Sub-Saharan Africa has been spending only around half of the estimated 7.1% of its GDP required annually to close its infrastructure gap by 2030.**[36]

Freight transport has continued to expand in the region, with the volume of goods carried in Africa's freight forwarding market projected to reach 1.66 trillion tonne-

kilometres in 2025.[37] **Container port traffic in the region grew 6.9% between 2015 and 2023, to 30.2 million twenty-foot equivalent units (TEU).**[38] However, it fell by 3.6 million TEU in 2023, possibly due to global supply chain disruptions and to the effects of attacks on commercial vessels in the Red Sea, which resulted in longer travel times from rerouting, port inefficiencies, higher transport and insurance costs, and delayed deliveries.[39] Overall, freight transport is a critical driver of African trade, regional integration and economic growth.

Road freight transport carried up to 80% of total goods in Africa in 2014, placing significant pressure on the road network and reflecting the limited reach and capacity of the region's rail systems, as well as the high costs of air transport.[40] Road transport continued to dominate in Africa even though transporting freight by rail tends to be cheaper, faster and safer.[41]

- As of 2020, 85% of all freight (except phosphate) in Morocco was transported by road.[42]
- Road freight accounted for around 80% of freight transport in Nigeria in 2011.[43]
- In 2022, South Africa's road freight sector moved 8.4 million tonnes of goods, more than five times the amount transported by rail (1.55 million tonnes).[44]

Even so, recent progress has been made in railway development across East and West Africa and in southern Africa.

- Tanzania's electric Standard Gauge Railway, spanning over 2,500 kilometres, is expected to be operational in 2025 and provides a rail freight transport option for several East African countries, connecting key Tanzanian ports (from Dar es Salaam on the Indian Ocean to Mwanza on Lake Victoria) as well as Burundi, the Democratic Republic of the Congo (DRC) and Rwanda.[45]
- In West Africa, the 393-kilometre Kano-Maradi single-track rail line between Kano (Nigeria) and Maradi (Niger) is planned to be completed in 2025, with a capacity to transport 9,300 passengers and 3,000 tonnes of freight per day.[46]
- In southern Africa, construction has begun on the Trans-Kalahari Railway connecting Walvis Bay (Namibia) to Gaborone (Botswana), with the aim of improving trade and providing better access to global markets for the landlocked countries of Botswana, Malawi, Zambia and Zimbabwe.[47]
- In 2024, feasibility studies confirmed the viability of the Ethiopia-Sudan Rail project, providing a level of bankability for the construction of 1,522 kilometres of rail connecting Addis Ababa to Port Sudan on the Red Sea.[48]

Road transport remains the main mode of transport for people in Africa, accounting for 90% of the region's passenger travel activity in 2014.[49] **Walking is by far the most common travel mode – either in itself or in combination with public transport – accounting for 50-90% of daily trips in many African cities as of 2021.**[50] **Yet most African cities are not walkable.** Most of the region's walkers are low-income residents, especially women, who cannot afford bus fares and struggle to access services. Although many governments have invested in infrastructure for vehicles, they often have not adhered to basic design standards for pedestrian infrastructure, with walkers having to navigate crude or non-existent footpaths, steep routes, potholes, open electrical wires and abandoned construction material.[51]

- In Tshwane (South Africa), nearly 65% of commuters walked or used public transport in 2015, compared to private car use of 33.1%.[52]
- A 2021 study in Kampala (Uganda) found that 50% of workers walk to and from the city, while nearly 90% of commuters either use public transport or walk for their daily commute.[53]

Despite the high modal share of collective transport in Africa, these systems have remained severely underdeveloped in many countries, often characterised by deep fragmentation, informal operations and weak regulatory oversight.[54] Collective transport in the region includes buses, shared minibus taxis (typically 13-25-seater vans), two- and three-wheeler motorcycle taxis, and rail. These services often operate without formal schedules or fixed routes, resulting in a highly fragmented network that varies in quality and reliability. In most cities, minibuses run by numerous private players dominate the landscape, operating in a largely un-co-ordinated manner that undermines efficiency and reliability. Many of the vehicles are second-hand imports, which are often poorly maintained and fuel-inefficient, contributing to both congestion and air pollution.

Several African countries have made strides towards modernising and decarbonising public transport by introducing bus rapid transit (Senegal and Tanzania) and undertaking institutional reforms to strengthen governance (Kenya and Nigeria).[55] Although informal systems dominate, some large metropolitan areas have set up more formal public transport systems (such as the Nairobi Metropolitan Area Transport Authority (NAMATA) and the Lagos Metropolitan Area Transport Authority (LAMATA)), in a shift towards more modern, inclusive systems.

- In January 2025, Morocco announced a USD 10.7 billion investment in high-speed rail and public transport, including USD 9.6 billion to expand the national rail network and USD 1.1 billion to improve urban transport by

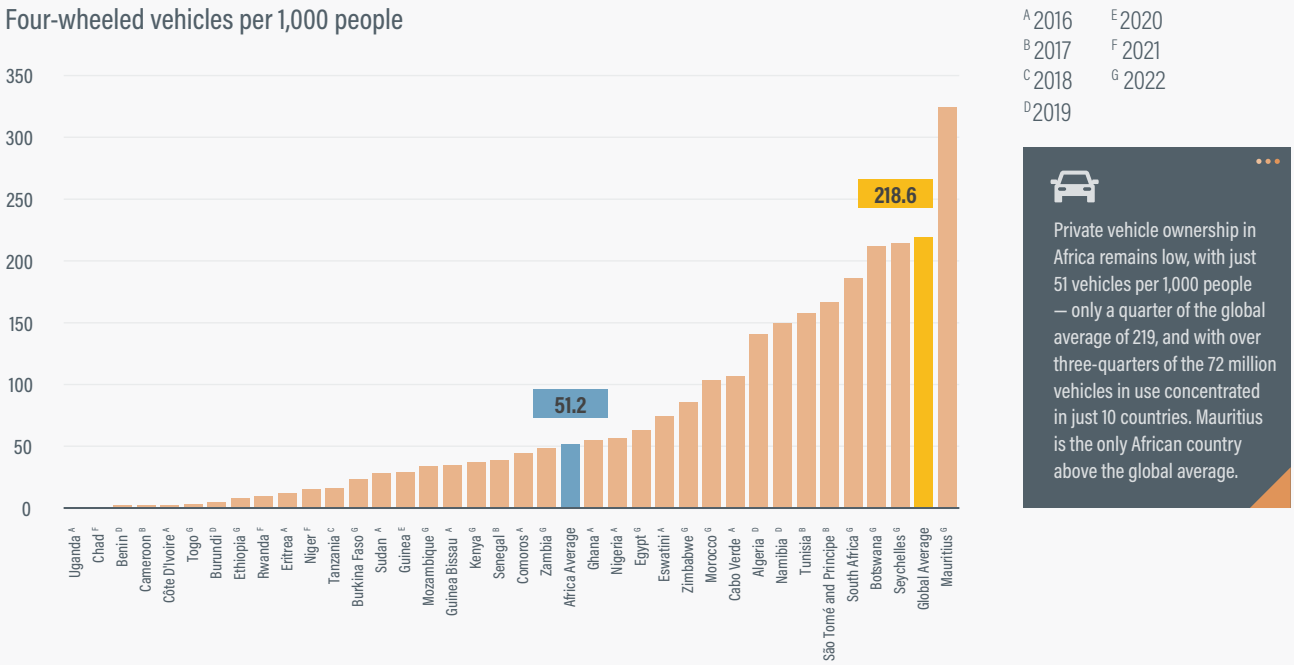
adding 3,746 new buses across 37 cities.[56]

- Nigeria launched Sub-Saharan Africa's first metro system in 2023.[57] Implemented through the Lagos Area Metropolitan Area Transport Authority, the Lagos Rail Mass Transit (LRMT) is improving urban transport through its operational blue and red lines and a 37-kilometre green line, which is starting construction in 2025 at a cost of USD 3 billion.[58]
- A bus rapid transit project in Dar es Salaam (Tanzania), launched in 2016 and being implemented incrementally, has improved the city's quality of life by reducing travel time, private car use, and urban congestion, while providing affordable, inclusive and safe travel for more than 8 million residents.[59] The project will avoid the release of an estimated 70,000 tonnes of CO_2 equivalent transport emissions annually on average over 30 years.[60]
- In 2023, Dakar (Senegal) launched West Africa's first fully electric bus rapid transit system, which operates 121 articulated electric buses, each with a range of 250 kilometres, along an 18.3-kilometre dedicated corridor with 23 stations across 14 city districts.[61] The system is co-financed by the World Bank, the European Investment Bank, and the Green Climate Fund, and is designed to carry up to 300,000 passengers daily, cut commuting times by half and reduce emissions.[62]
- Additional African cities that are piloting electric buses to reduce operating costs and environmental impact include Cape Town (South Africa), Kigali (Rwanda), Lagos (Nigeria), and Nairobi (Kenya), under operators like BasiGo and Roam.[63]
- The government of Rwanda has provided incentives for electric bus operators and for local assembly of electric vehicles.[64]

In the absence of efficient, well-integrated public transport systems in many African cities, the region's rapidly expanding middle class has turned increasingly to private car ownership. Urban sprawl has left many communities underserved by public transport, leading those who can afford it to rely on private vehicles as a more accessible means of travel.[65] Although vehicle ownership in Africa remains below the global average, its growth rate is among the world's fastest, and the vehicle market is rife with polluting second-hand imports.[66] This trend is reinforcing car-centric transport planning, worsening inequalities for the majority share of the population that depends on walking, cycling and public transport. There is a critical need to decouple the region's rising motorisation rate and car-centric planning and to favour plans for more sustainable transport.

Africa's motorisation rate (covering four-wheeled motorised vehicles), at 51 vehicles per 1,000 people in 2022, remained well below the world average of 218 vehicles per 1,000 people (Figure 2).[67] **However, it is increasing rapidly, rising 34% between 2017 and 2022 due to rapid urbanisation and rising household incomes.**[68] **More than three-quarters of the region's 72 million vehicles in use are concentrated in just 10 countries.**[69] African countries with the highest motorisation rates include Mauritius (324 vehicles per 1,000 people), Seychelles (214), Botswana (212) and South Africa (186).[70]

FIGURE 2. Motorisation rates per 1,000 people in Africa, various years



Private vehicle ownership in Africa remains low, with just 51 vehicles per 1,000 people — only a quarter of the global average of 219, and with over three-quarters of the 72 million vehicles in use concentrated in just 10 countries. Mauritius is the only African country above the global average.

Source: See endnote 67 for this section.

More than 85% of vehicles in Africa in 2020 were used vehicles imported from Europe, the United States, and Japan, which typically fail safety and emission standards in their home countries.[71] **As of 2019, over 80% of the region's road vehicles fell below the Euro 4 vehicle emission standards while also lacking valid roadworthiness.**[72] In 2022, more than 750,000 used light-duty vehicles were imported to Africa, many of them old, unsafe and polluting vehicles.[73]

Domestic motor vehicle production in Africa rebounded 16% (well above the global rate of 3%) in 2021, after slumping in the early years of the COVID-19 pandemic; however, the region represented only 1.2% of total global vehicle production in 2023.[74] **Vehicle production in Africa is concentrated in Algeria, Egypt, Morocco, and South Africa, while a handful of other countries – such as Angola, Ethiopia and Ghana – have vehicle assembly plants.**[75] The reliance on used vehicle imports has hampered the development of a robust African automotive industry, particularly for the production and assembly of light-duty, four-wheeled motorised vehicles.

The rise in motorcycle use across Africa underscores growing mobility needs for both personal and commercial use, as well as the continued challenges posed by inadequate and unreliable public transport.

- As of mid-2022, an estimated 27 million motorcycles were in use across Sub-Saharan Africa, up from only 5 million in 2010, with projections for 9.5% annual growth through 2030.[76]
- Household survey data from 2010 to 2022 found that West Africa led in motorcycle ownership, with the highest rates in Mail (64%), Burkina Faso (63%), and Benin (56%), followed distantly by East Africa with its highest rates in Kenya (14%), Tanzania (12%) and Mozambique (10%).[77]

Electric vehicles had a very minor presence in Africa in 2024, with the region's 15,000 electric cars comprising only 0.05% of the total car fleet, and its 25,000 electric motorised two- and three-wheelers having only a 0.13% fleet share.[78] As of 2024, Tanzania had the largest electric vehicle fleet in East Africa, with more than 10,000 units in use; more than 90% of these were two- and three-wheelers, reflecting their dominance in the country's electrification landscape.[79]

The market for electric vehicles in Africa could reach USD 21.4 billion by 2027, driven by projected growth in the market for electric two- and three-wheelers from USD 3.65 billion in 2021 to USD 5.07 billion in 2027.[80] **Electric two- and three-wheelers could account for 50-70% of the region's total electric vehicle sales by 2040.**[81] Most electric vehicle businesses in Africa have focused on two- and three-

wheelers, although there is growing interest in electrifying buses for public transport in countries like Egypt, Kenya, Senegal and South Africa.[82]

Africa holds vast reserves of critical minerals essential for electric vehicle manufacturing and supporting the global energy transition. For example in 2019, the DRC was responsible for 70% of global production of cobalt.[83] These sources, if harnessed with sustainable practices and industrial policy, could create regional value chains in battery production and electric vehicle assembly.

Overall, Africa's transport sector can benefit from addressing the significant challenges of limited infrastructure, weak governance and climate vulnerability.

Sustainability and climate trends

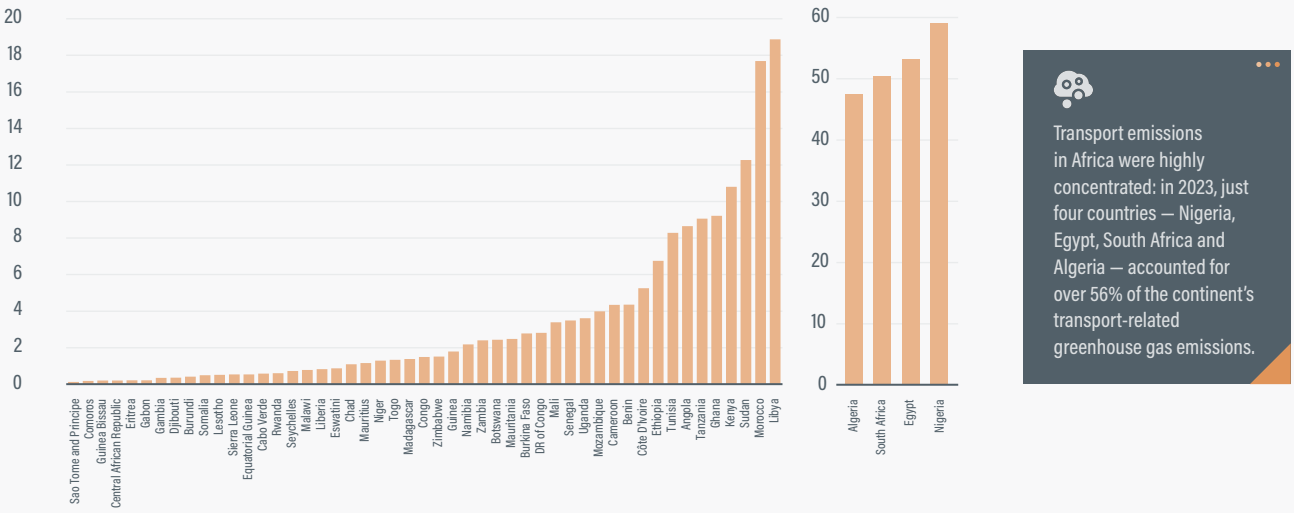
In 2023, Africa was home to nearly one-fifth (18%) of the world's population, yet it contributed only 6.2% of global greenhouse gas emissions and 5.3% of global transport greenhouse gas emissions (excluding international aviation and shipping).[84] The region's transport emissions grew 0.1% in 2023 to reach 375 million tonnes of CO_2 equivalent.[85] Although Africa had the second lowest transport emissions among global regions in 2023 (after Oceania), they increased 10.3% between 2015 and 2023, the second highest growth rate after Asia (19%).[86] In East Africa and South Africa, rising emissions were driven mainly by population growth and economic growth.[87]

The distribution of emissions across Africa is highly uneven, with the top four emitting countries – Nigeria, Egypt, South Africa and Algeria – responsible for more than half (56%) of the region's transport greenhouse gas emissions in 2023 (Figure 3).[88] Transport was the second largest greenhouse gas emitting sector in Algeria in 2023, and the largest sector in countries like Cabo Verde, Comoros, São Tomé and Príncipe, and Seychelles.[89]

Africa's per capita transport greenhouse gas emissions remained the lowest globally in 2023, at only 0.26 tonnes of CO_2 equivalent per person, well below the global average of 0.89 tonnes of CO_2 equivalent per person (Figure 4).[90] The distribution of per capita transport emissions ranged from only 0.027 tonnes in Djibouti to 5.69 tonnes in Seychelles, a country with high transport demand driven by tourism, particularly from long-haul flights arriving from Europe and beyond.[91]

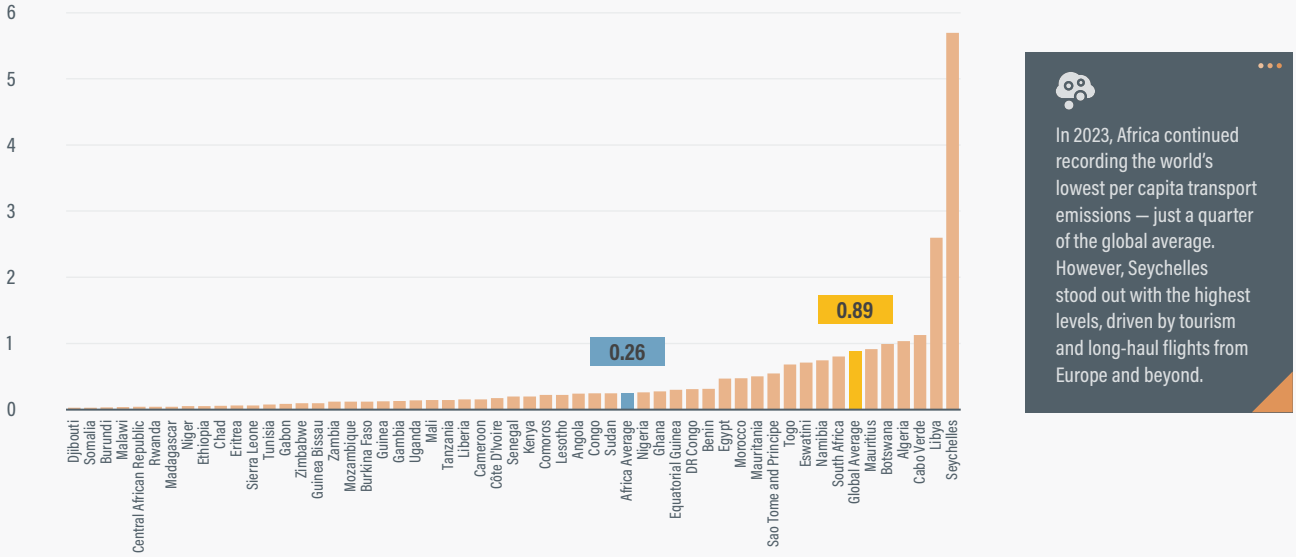
In 2021, surface transport (road, rail and inland waterways) accounted for 97% of transport greenhouse gas emissions in Sub-Saharan Africa.[92] Increases in road transport emissions were driven by dependence on fossil fuels; reliance on used

FIGURE 3. Transport greenhouse gas emissions in Africa, 2023



Source: See endnote 88 for this section.

FIGURE 4. Per capita transport greenhouse gas emissions in Africa, 2023



In 2023, Africa continued recording the world's lowest per capita transport emissions — just a quarter of the global average. However, Seychelles stood out with the highest levels, driven by tourism and long-haul flights from Europe and beyond.

Source: See endnote 90 for this section.

vehicle imports that are older, less fuel-efficient and unsafe; and a lack of efficient public transport systems.[93]

Africa's transport emissions relative to economic output fell 2.3% in 2023 to reach 1.29 tonnes of CO_2 equivalent per USD 10,000, but this was still the highest level among global regions.[94] The most likely reason for the decline was that economic growth outpaced the growth in transport emissions.

Reliance on private road transport has led to high levels of traffic congestion in many African cities.

- In the Greater Kampala Metropolitan Area (Uganda), the estimated daily cost of congestion was USD 1.5 million in 2020, or 4.2% of the area's GDP.[95]
- A 2023 study found that workers in Lagos (Nigeria) spent on average 2.2 hours on their daily commute, costing the city USD 2,500 million (NGN 4 trillion) per year.[96]
- Cape Town (South Africa) ranked among the world's top 10 most congested cities in 2024, with more than 94 hours of traffic delay annually, based on a dataset that includes only cities in South Africa.[97]

The average carbon intensity of electricity generation in Africa in 2023 was 430 grams of CO_2 equivalent per kilowatt-hour (kWh), close to the global average of 417 grams of CO_2 equivalent per kWh.[98] **Many of the African countries with high transport greenhouse gas emissions have very low shares of renewable energy in their total transport energy consumption, constraining a key benefit of transport electrification.**[99] In Algeria, renewable energy accounted for 1.1% of total transport energy consumption in 2022.[100] The region's high transport emitters had low shares of renewable energy consumption in the transport sector

Transport contributed 3.2% of the region's total air pollution in 2019, leading to 1.01 premature deaths per 100,000 people in 2019; this was well below the global average of 6% and 2.3 deaths per 100,000 people.[101] However, these values vary greatly by country.[102]

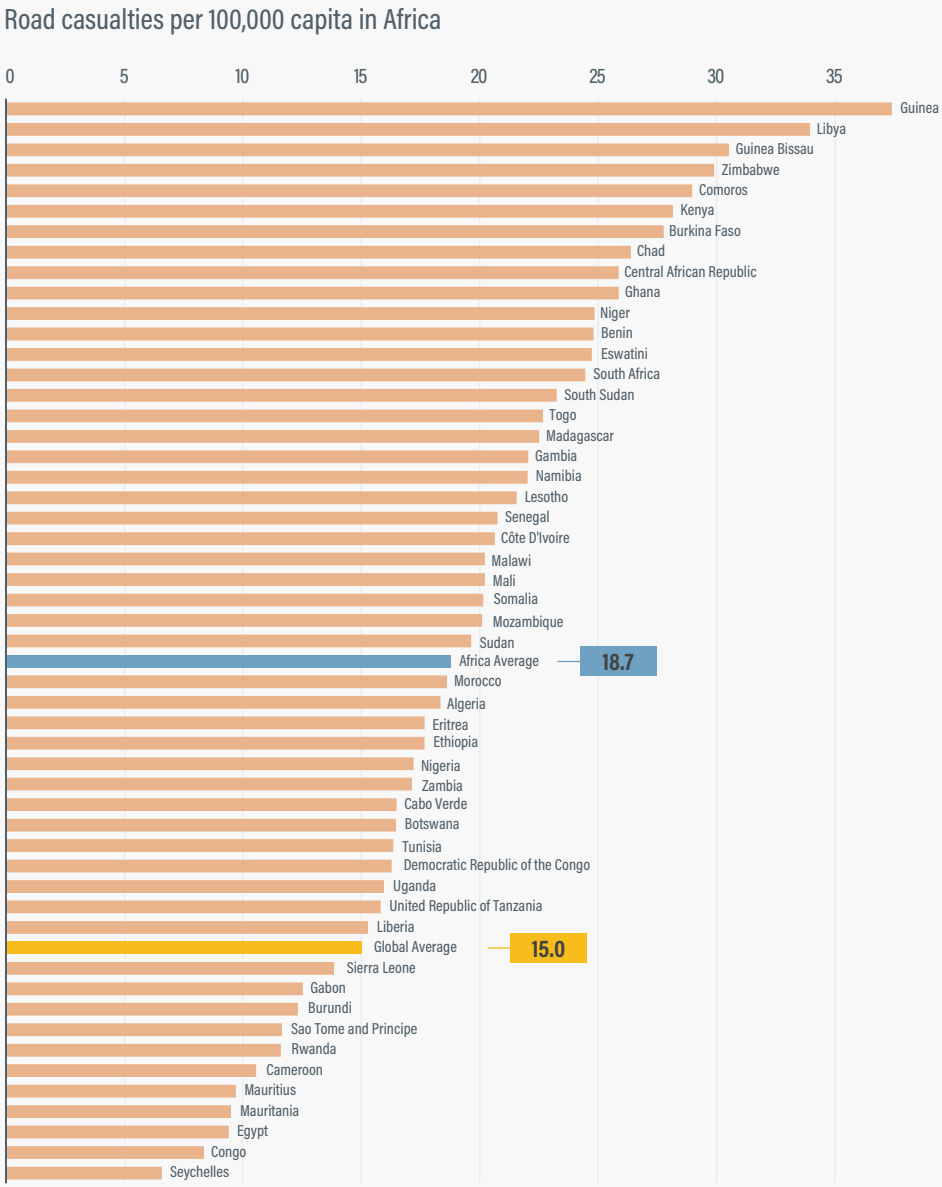
- Transport's contribution to air pollution ranged from 0.4% in Cabo Verde to 18% in Algeria, where air pollution led to an estimated 8.84 premature deaths per 100,000 people in 2019.[103] This was almost four times the global average and is attributed to the exponential rise in motorisation rates and an ageing vehicle fleet, among other factors.[104]
- In 2024, Benin, Egypt, Mali, the Republic of Congo and Somalia reported very high sulphur levels in their fuels (exceeding 5,000 parts per million), which contributes to air pollution.[105]

Despite low motorisation, Africa experiences relatively high

road fatality rates due to the gap in safe infrastructure – with an average of 18.8 casualties per 100,000 people in 2021 (Figure 5) – **making it home to the world's most dangerous roads.**[106] **More than half of road traffic deaths in the region involve vulnerable road users such as pedestrians, cyclists and motorcyclists.**[107] Across Africa, sub-standard reporting on road traffic fatalities has undermined efforts to effectively monitor road safety and to implement evidence-backed interventions.[108] In 2021, less than 20% of assessed roads in Africa met recommended three-star or better safety standards for pedestrians and cyclists, while the rate was below 30% for motorcyclists and below 40% for vehicle occupants.[109] Stronger regulation and investments in cleaner, safer two-wheelers are needed to address the significant public health concerns associated with motorcycles, particularly air pollution and the high risk of road crashes.

Despite contributing the second least to global greenhouse gas emissions, Africa is among the most vulnerable regions to the impacts of climate change.[110] **The region loses an**

FIGURE 5. Road casualties per 100,000 people in Africa, 2021



Most African countries have road fatality rates above the global average, making Africa home to the world's most dangerous roads.

Source: See endnote 106 for this section.

estimated USD 7-15 billion annually due to the devastating effects of climate change, a figure that could rise to USD 50 billion by 2030, representing up to 7% of Africa's GDP on average.[111] The region has experienced increasing numbers and intensities of extreme weather events, with record fatalities due to rising temperatures, persistent drought, catastrophic flooding and destructive cyclones. In addition to the toll on livelihoods, these impacts are reversing economic gains and increasing the risk of more people slipping into extreme poverty.[112]

- Most African countries lose between 2% and 5% of their GDP every year due to climate change and must adjust up to 9% of their national budgets to respond to extreme weather events.[113]
- In February 2025, heavy summer rainfall and storms in South Africa's KwazaNatal Province claimed 22 lives and caused an estimated USD 166 million (SAR 3.1 billion) in damages, including to transport infrastructure and assets.[114]
- Mozambique's National Adaptation Plan from 2023 highlights that since 2019, weather-related events had destroyed 7,627 bridges and 32,9334 school infrastructures, and compromised around 47,774 kilometres of road.[115]

Policy and investment developments

The need for greener, more equitable, healthier and safer mobility systems in Africa has become increasingly urgent. The combined impacts of climate change, public health crises and heightened geopolitical tensions have underscored the importance of transforming transport in the region. Many African governments have recognised the need to transform transport systems to support envisioned economic growth. This is reinforced by global and regional frameworks, including the United Nations' 2030 Agenda for Sustainable Development, which notes the importance of sustainable transport in achieving the Sustainable Development Goals (SDGs), and the African Union's Agenda 2063, which points to the role of efficient transport in Africa's transformation to a global powerhouse.[116]

Although Africa's shift to electric mobility has lagged, more governments have become aware of the detrimental impacts of fossil fuel-powered vehicles and have implemented policies and fiscal incentives to promote the uptake of electric vehicles.[117]

- In Zambia, the government removed customs duties on electric vehicles, electric buses, and trucks, as well as on charging systems and accessories for electric vehicles or cycles, with the aim of encouraging clean energy use and reducing fossil fuels.[118]
- To address the high costs of imported petrol and diesel, Ethiopia announced a ban in 2024 on imports of internal combustion engine vehicles, becoming the first country in the world to prohibit imports of fossil fuel vehicles; only electric-powered vehicles were to be allowed into the country as of January 2024.[119]
- Ghana removed import duties on electric vehicles and their components in 2024 and launched a National Electric Vehicle Policy in 2023.[120]
- Rwanda has one of Africa's most extensive strategies to support electric vehicle adoption, providing exemptions on value-added tax (VAT) and import duties for electric vehicles, spare parts, and charging equipment; a preferential corporate income tax rate for investors in the electric vehicle market; and reduced electricity tariffs for electric vehicles and charging stations.[121]

More African countries also joined global initiatives to phase out fossil fuel-powered vehicles.

- In 2024, Nigeria joined the Accelerating to Zero Coalition, a global initiative aiming for all sales of new cars and vans to be zero-emission by 2040; Ghana, Kenya, Morocco and Rwanda have been signatories since 2021.[122]
- Ghana and Cabo Verde joined the Global Memorandum of Understanding on Zero-Emission Medium- and Heavy-Duty Vehicles in 2023, followed by Ethiopia, Mozambique and Seychelles in 2024.[123] The initiative commits signatories to achieving 100% zero-emission new truck and bus sales by 2040, with an interim target of 30% by 2030.[124]

As of 25 May 2025, five African countries – Botswana, Lesotho, Kenya, Zambia and Zimbabwe – had submitted to the United Nations Framework Convention on Climate Change (UNFCCC) their third generation Nationally Determined Contributions (NDCs) towards reducing emissions under the Paris Agreement.[125] Botswana's was the only submission from Africa with a target for reducing transport greenhouse gas emissions.

- Botswana's NDC of 2024 aims to reduce transport emissions by 0.429 million tonnes of CO_2 equivalent by 2030 (of which 0.147 million tonnes of CO_2 equivalent are conditional).[126]
- Lesotho's NDC of 2024 sets out to increase the share of public passenger transport from 10% to 30%, develop new cycling lanes and reduce the number of poor-performing vehicle imports through regulations on used car imports. It features strong content on adaptation and resilience, including detailed targets, measures, and their respective

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mitigation benefits and alignment with the Sustainable Development Goals (SDGs).[127]

- Zambia's new NDC does not include any transport mitigation or adaptation actions or targets, whereas Zimbabwe's halts all of the transport actions that were included in the country's previous NDC, including biofuel support measures and improvements to vehicles and public transport.[128]
- As of 25 May 2025, the third-generation NDC submissions from Africa (with the exception of Lesotho's) failed to identify actions for walking and cycling, despite high use of these modes by African populations, particularly vulnerable groups.[129]
- Africa's third-generation NDCs as of May 2025 missed an opportunity to acknowledge the potential for informal transport to contribute to climate change mitigation and adaptation – an approach that can be leveraged to attract more funding to improve and modernise this sub-sector.[130]

Among Africa's second-generation NDCs (2019-2024), 11 countries (or 34% of those with transport-related greenhouse gas mitigation targets in their second-generation NDCs) included explicit targets for reducing transport-related greenhouse gas emissions.[131] The 11 countries were Burkina Faso, Egypt, Gambia, Guinea, Liberia, Mauritania, Mauritius, Seychelles, South Sudan, Sudan and Uganda.

For the latest analysis of transport commitments in NDCs, including those expected ahead of COP30, see the NDC Transport Tracker by GIZ and SLOCAT*, a database on ambition, targets and policies in NDCs and Long-Term Strategies.*[132]

As of 25 May 2025, 10 African countries (out of 76 total submissions) had submitted to the United Nations their LT-LEDS (Long-Term Low Emissions Development Strategies), indicating stronger national commitment to reducing transport greenhouse gas emissions, facilitating the shift to more sustainable modes and increasing alignment with the Paris Agreement.[133] LT-LEDS complement NDCs and reflect countries' strategies to 2050 and beyond. More African countries have integrated low-emission growth strategies into their national development plans, recognising the need to foster economic development alongside efforts to address climate change.

- Burkina Faso's LT-LEDS of 2025 aims to reduce transport emissions 41.1% compared to business as usual by 2050 through investments in rail infrastructure (with an aim to transport 40-80% of traded goods by rail), public transport use and transit-oriented development in cities.[134]
- Ethiopia's LT-LEDS of 2023 promotes the electrification of the vehicle fleet (including by introducing electric buses and scaling up charging infrastructure), the expansion of mass transit and non-motorised transport, and

improvements in fuel efficiency, including a ban on used vehicle imports by 2030 – underscoring the benefits for climate resilience and sustainable urban development.[135]

- Equatorial Guinea's LT-LEDS of 2024 envisions improving the efficiency of road, air and sea transport; substituting zero-emission vehicles; strengthening public transport; and promoting walking and cycling by 2050.[136] In line with its NDC, the country's Long-Term Vision suggests transport measures including a carbon pricing market, a robust urban and intra-urban public transport network (mostly zero-emission buses) by 2050 and a 50% drop in private vehicle use.[137]
- Nigeria's LT-LEDS of 2024 outlines a clear strategy for decarbonising the transport sector, including through wide adoption of electric and ethanol vehicles (alongside massive deployment of clean natural gas and liquefied petroleum gas vehicles) by 2060, a shift to low-carbon modes, adoption of Euro 4 efficiency standards for all road vehicles by 2030 and the use of smart transport management technologies.[138] The strategy does not outline specific transport adaptation strategies but highlights the adaptation co-benefits of mitigation measures.[139]

During the 2023-2024 period, five African countries – Burundi, Morocco, Mozambique, Zambia and Zimbabwe – submitted National Adaptation Plans (NAPs) to enhance their transport adaptation and resilience efforts.[140]

- Burundi's NAP of 2023 presents adaptation actions set out in the country's Third National Communication on Climate Change (2019), including actions related to inland water transport (dredging, river training, and protection of access channels and port basins) and rehabilitation and maintenance of the existing road network to adapt it to the effects of climate change.[141]
- Morocco's NAP of 2024 prioritises developing a vulnerability assessment methodology to serve as a baseline for a city adaptation strategy and measures; the assessment would be supported by urban sustainability indicators relating to infrastructure and mobility, among others.[142] The NAP also supports addressing climate change locally in all policies, as well as developing knowledge and research to strengthen adaptation approaches and actions, including strengthening knowledge of the impacts of climate change on the transport sector.[143]
- In its 2023 NAP, Mozambique, one of the most-exposed African countries to extreme weather events, identifies floods and tropical cyclones as the highest risks to transport infrastructure, whereas rising sea levels and changes in temperature are seen as medium risks.[144] Proposed activities to enhance resilience include mapping and vulnerability/risk assessment of disaster-prone infrastructure and improving climate insurance.[145] Mozambique also adapted the 2017-2030 Disaster Risk Reduction Master Plan (2017-2030) and the SADC Infrastructure Master Plan.[146]
- Zambia's 2023 NAP provides a detailed assessment of vulnerability elements, exposures by hazard, adaptive capacity, level of sensitivity, and climate risk level, among others.[147] Adaptation actions for transport infrastructure include enforcing construction codes, improving access to weather and climate information, strengthening early warning systems, and applying climate-resilient infrastructure codes and standards to transport infrastructure (i.e., airports and railways).[148]
- Zimbabwe's NAP of 2024 aims to integrate climate change adaptation strategies into development policies, strategies, plans, programmes and activities. Transport-related adaptation actions include developing and promoting climate-resilient infrastructure standards, updating existing standards to consider climate change, strengthening early warning systems, and sustaining cross-cutting enablers such as capacity building, knowledge management and financing to build resilience.[149]

In 2023, fossil fuel subsidies in Africa totalled USD 199 per capita, the lowest level among regions and less than a fourth of the global average of USD 813 per capita.[150] **However, the region's fossil fuel subsidies are projected to increase around 45% between 2023 and 2030, further undermining climate and sustainability efforts.**[151] Fossil fuel subsidies have incentivised ongoing fossil fuel use in Africa, contributing to rising greenhouse gas emission levels.

Renewables represented only 0.15% of Africa's total final energy consumption in transport in 2021.[152] **However, countries have made strides to harness the region's great potential for renewable energy.** South Africa's Renewable Energy Masterplan, launched in 2023, aims for a minimum roll-out of 3 gigawatts (GW) of renewables annually, ramping up to 5 GW by 2030.[153] Although this target is not sector-specific, the increased renewable energy supply could support transport-related activities.

Developments in freight transport policy have advanced in the context of improving intra-Africa trade and operationalising the African Continental Free Trade Area (AfCFTA).

- The Northern Corridor, an important transport route in East and Central Africa, aspires to become a net zero emission corridor by 2050.[154] A key objective of the Northern Corridor Green Freight Strategy, released in 2024, is to ensure that the freight system along the corridor remains robust, adaptable and resilient in the face of climate change.[155]

- In 2024, the Tanzania-Zambia Railway Authority (TAZARA) signed an agreement with China Civil Engineering Construction Corporation to invest up to USD 1.4 billion to rehabilitate and upgrade the TAZARA railway line in southern and eastern Africa.[156] This critical route linking Zambia to the port of Dar Es Salaam (Tanzania) is expected to enhance connectivity and offer an alternative to road transport for cargo movements.[157] Revitalising TAZARA provides an opportunity to shift a large share of regional freight traffic from road transport towards a lower-emitting rail network.
- The Lobito Corridor Memorandum of Understanding – signed in 2023 by development partners including Angola, the DRC, Zambia, the European Union and the United States – includes plans to rehabilitate and expand the rail line connecting mineral-rich regions of the DRC and Zambia to the port of Lobito (Angola), including by renovating the existing BenguWela railway and building new rail lines (including a 350-mile extension into Zambia).[158] The rail corridor is expected to provide an alternative route that could greatly reduce transport costs for mineral exports.[159]
- In 2024, the African Development Bank allocated around USD 279 million (EUR 246 million) for construction of the 104.5 kilometre Guercif-Nador Highway Project in Morocco, which aims to better connect the country's inland production zones with the future Nador West Med Port on the Mediterranean Sea, helping to boost the number of products coming through the region.[160]

More African countries have recognised the importance of enhancing walking, cycling and public transport for improved urban mobility.

- The Pan-Africa Action Plan for Active Mobility (PAAPAM), launched at the World Urban Forum in Cairo in 2024, seeks to elevate walking and cycling in African mobility systems.[161] Its vision is anchored on three strategic pillars – safety, advocacy and policy integration – with strategies to eliminate road fatalities for pedestrians and cyclists, enhance accessibility and create infrastructure that fosters clean access for all.[162] A milestone has been the prioritisation of non-motorised transport in urban policy discussions, although challenges include difficulties changing mindsets around walking and cycling, inadequate financing and the lack of political commitment.[163]
- In Kumasi (Ghana), the Sustainable Urban Mobility Plan (SUMP) for 2024-2040 aims to promote walking and cycling as safe, viable transport modes, including by improving non-motorised transport, traffic conditions and safety; developing the road network; installing more than 100 kilometres of quality sidewalks and piloting a shared bicycle system.[164] The plan proposes a three-tier public transport system with bus rapid transit on key corridors, quality bus services on secondary routes, and enhanced regulation of the *tro-tro* minibus network. The aim is to improve accessibility, safety and service while shifting to more sustainable, inclusive urban mobility.[165]

Several African countries have taken significant steps to address road safety challenges through a combination of policy and innovative, context-specific initiatives.

- The Marrakech Declaration, emanating from the Fourth Global Ministerial Conference on Road Safety in Morocco in February 2025, adheres to "the fundamental premise that the transport system should result in zero deaths or serious injuries and that safety should not be compromised for other factors such as cost or the desire for faster transport times".[166] The event invited Member States and relevant stakeholders to leverage the UN Decade of Sustainable Transport, set to begin in 2026, as "an opportunity to embed road safety as an integral part of the agenda for sustainable transport" and called on members to implement policies for multi-modal mobility.[167]
- In 2024, Morocco's National Road Safety Agency introduced the Collision Matrix, a diagnostic tool designed to provide greater insight into the dynamics of road traffic crashes by analysing high-risk interactions among different user types.[168] Encompassing data collection, matrix development, stakeholder engagement, and localised action planning, the initiative has informed interventions such as stronger enforcement of helmet laws and the development of dedicated cycling lanes, and has shown early success in reducing injury severity and improving road user safety.[169]
- In Cameroon, the Ministry of Transport's Ym@ne Driver System aims to address key risk factors in inter-city transport and uses a combination of real-time data collection, driver behaviour analysis and fleet management to address three main concerns: human error, vehicle defects and poor road conditions.[170] The initiative has helped reduce speeding, phone use and seatbelt non-compliance; fatalities from hazardous goods transport; and crash incidences for transporters.[171]
- In 2024, Kenya launched its National Road Safety Action Plan (2024-2028), aimed at reducing road traffic fatalities 50 percent by 2030.[172] The strategy is managed through a multi-sectoral governance structure, and initial impact assessments show a decline in speeding violations and improved adherence to traffic rules; however, efforts to improve safety have been slowed by inadequate infrastructure, particularly in rural areas, as well as user resistance to change.[173]

The region faces a major gap in infrastructure investment, with average annual investment in 2022 totalling around

USD 80 billion, well below the required USD 130 to 170 billion per year.[174] Transport infrastructure alone requires USD 35 to 47 billion per year. In addition to infrastructure deficits, there are shortages in vehicles: research on the implementation of the African Continental Free Trade Area estimated that 2 million heavy-duty trucks, 150,000 rail wagons, 150 ships, and 250 aircraft would be needed, amounting to a financial requirement of USD 400 billion.[175]

- In 2023, multilateral development banks provided USD 2.2 billion for mitigation activities in the transport sector, and USD 1.9 billion for adaptation measures (covering energy, transport and other built environment and infrastructure sectors), in low- and middle-income countries of Africa and the Middle East.[176] This represented 26% of the banks' overall mitigation finance in 2023 and 30% of their overall adaptation finance.[177]
- In 2023, private investment in transport infrastructure projects in Africa was less than a third of the level in Asia and 2.5 less than in Latin America and the Caribbean.[178]

Partnerships in action

SLOCAT partners engaged in dozens of actions during 2023-2024, including:

- **Bridges to Prosperity**, a non-profit organisation based in the United States and Africa, is working to end rural isolation by building bridge infrastructure to link underserved communities to markets, schools and health care.[179] Operating in more than 21 countries and using local labour and government support, the organisation has built more than 480 bridges, benefiting around 1.7 million people.[180] Most bridges are completed within 12 weeks and typically repay their investment within two years.[181] The initiative exemplifies how low-cost, community-based infrastructure can generate outsized social and economic returns.
- The **EBee Kenya - Sustainable Transport Africa** project, supported by the World Resources Institute, is advancing the adoption of electric bicycles in Mombasa and Nairobi.[182] The partnership goes beyond product deployment, aiming to build an enabling environment for e-bike adoption through policy engagement, awareness campaigns and job creation.[183]
- The **Emergent + Empowered forum**, held in September 2024, was focused on mobilising global informal transport systems, especially in the Global South, for greater equity, sustainability and resilience. The forum identified four strategic pathways - Climate Action and Just Transition, Finance and Investment, Policy and Advocacy, and Data and Research - as critical levers for transforming informal transport networks.[184] The event was convened by the Shared-Use Mobility Center, the Center for Sustainable Urban Development at Columbia Climate School, the Partnership for Research in Informal and Shared Mobility (PRISM) and Volvo Research and Educational Foundations (VREF).
- The **Green Freight Support Program**, launched in 2024 by the Kuehne Climate Center and Smart Freight Centre, promotes efficient, low-emission and inclusive freight systems across eastern Africa.[185] The programme supports implementation of the green freight strategies of the Northern Corridor Transit and Transport Coordination Authority and the Central Corridor Transit Transport Facilitation Agency, and also fosters training and knowledge sharing among freight operators to accelerate a just and sustainable logistics transition (through partnerships with the Shippers Council of Eastern Africa, the Federation of East African Freight Forwarders and others).[186]
- The African Transport Policy Program (SSATP), in partnership with the World Bank Group, implements the **Leaders in Urban Transport Planning** (**LUTP**) programme across Anglophone and Francophone African countries.[187] Through a combination of case studies and practical sessions, LUTP equips transport officials with the tools to make informed decisions in urban mobility planning, helping to strengthen leadership capacity and promote integrated, sustainable transport strategies tailored to local needs.[188]
- The **Pan-African Action Plan for Active Mobility** (**PAAPAM**) is a continent-wide policy framework that aims to help African cities and countries improve conditions for walking and cycling, protect vulnerable road users and enhance access to public transport.[189] By prioritising non-motorised transport, the framework supports equitable and low-carbon urban mobility across the continent. PAAPAM is coordinated by the UN Environment Programme, UN-Habitat and the World Health Organisation. It was developed with several partners including the Institute for Transportation and Development Policy, WRI and GIZ. The plan was developed with global strategic insights from Walk21.

MODULE 3 | 3.2

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Asia Regional Overview

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Federal Ministry for Economic Affairs and Climate Action

IKI INTERNATIONAL CLIMATE INITIATIVE

DEMOGRAPHICS, TRANSPORT AND SUSTAINABILITY DATA

Indicators	Asia	Global
Population size (2023)	4,732 million	8,000 million
Population growth (2015-2023)	6.8%	8.5%
Urban population share (2023)	52.3%	57%
Urban population growth (2015-2023)	18.1%	16%
GDP per capita (2023)	USD 7,496 (constant 2015 USD)	USD 11,337 (constant 2015 USD)
GDP growth (2015-2023)	36.5%	22.8%
Share of women employed in transport and storage (2023)	13.3%	15.6%
Motorisation rate (2022)	140.4 vehicles per 1,000 people	218.66 vehicles per 1,000 people
Share of urban population with convenient access to public transport (2020)	49.1%	52%
Share of rural population with access to all-weather primary and secondary roads (2020)	40.8%	38%
Transport total GHG emissions (2023)	2,871 million tonnes CO_2eq	7,123 million tonnes CO_2eq
Per capita transport GHG emissions (2023)	0.61 tonnes CO_2eq	0.89 tonnes CO_2eq
Fossil fuel subsidies (explicit and implicit) (2023)	USD 865 per capita (constant 2021 USD)	USD 813 per capita (constant 2021 USD)
Share of renewable energy sources in transport	3% (2021)	4.6% (2023)
Carbon intensity of electricity generation (2023)	559.5 gCO_2/kWh	417 gCO_2/kWh
Transport contribution to air pollution (2019)	8%	6%
Premature deaths attributable to air pollution by transport (2019)	3.2 per 100,000 people	2.29 per 100,000 people
Road casualties (2021)	15.5 per 100,000 people	15 per 100,000 people

Source: See endnote 1 for this section.

KEY FINDINGS

Demand, use and access

- In 2023, Asia was home to more than half (58%) of the world's population and accounted for 47% of global GDP. However, the region housed only 38% of the world's transport infrastructure that year.
- Around 60% of Asia's rural population lacked access to all-weather roads network as of 2019, impeding connectivity and limiting access to economic opportunities. Access levels varied widely across countries.
- Although more than half (52%) of Asia's population resided in cities in 2023, slightly less than half (49.1%) of the region's urban population on average had convenient access to public transport (compared with a global average of 52%). Levels ranged from 99.9% in Singapore to only 7.3% in Jordan. A 2024 assessment found that a third of Asian countries (31%) had set targets to enhance public transport, introducing bus rapid transit systems or urban rail.
- As of 2023, only 24% of cities in Asia were providing at least half of their population with access to essential services (such as health care and education) within a 1-kilometre walking distance, compared to 39% of around 1,000 cities globally. Walking and cycling are on the decline in Asian cities, as data from 2018 to 2023 showed a shift to motorcycles and cars.
- Despite considerable expansion of bus rapid transit systems across the region – from around 9,400 kilometres in 118 cities in 2015 to 15,800 kilometres in 154 cities in 2021 – their availability has lagged compared to high-income countries, and the bus sector has continued to face challenges.
- In 2023, less than 20% of the population across most of Asia lived within 300 metres of a physically protected bikeway.
- Progress in enhancing freight transport and logistics performance has been uneven across Asia, with China, India, Indonesia, Thailand, and Viet Nam making strides, while other countries lagged.
- Freight transport in Asian cities grew an estimated 20% in 2020, driven by a surge in e-commerce and online deliveries, particularly by couriers, forwarders and parcel-delivery services.
- Passenger transport demand in Asia fell temporarily in 2020 due to the effects of the COVID-19 pandemic, but by 2023 the sector had recovered to surpass 2018 levels in most sub-regions, except the Pacific.
- Passenger and freight transport demand in Asia is projected to double or even triple between 2020 and 2050.
- Asia has experienced tremendous development in transport infrastructure in recent years, driven by economic growth, transport demand, trade flows, regional connectivity needs and urbanisation.
- Roads accounted for the vast majority (98%) of the region's surface transport infrastructure during 2021-2023, whereas railways made up 2% and urban rapid transit systems a mere 0.1%. Funding for road infrastructure has outweighed that for rail infrastructure in Asia, despite substantial (yet uneven) growth in rail across countries.
- In 2023, the transport infrastructure density in Asia was 433 kilometres per 1,000 square kilometres, well below the density for countries in the Organisation for Economic Co-operation and Development (OECD), at 690 kilometres per 1,000 square kilometres. Asia's road transport infrastructure, at 10 kilometres of road per 1,000 people, was below the global average of 11 kilometres of road per 1,000 people in 2022.
- Asia has experienced steady growth in rail infrastructure since 2015, accounting for 75% of the global growth in railways between 2015 and 2021. The region's railway infrastructure expanded by around 116,000 kilometres between 2010 and 2021.

KEY FINDINGS

- Growth in the region's road transport infrastructure has been greatly outpaced by the surge in private vehicle ownership, which grew 7.3% annually between 2010 and 2022.
- In 2022, the average motorisation rate in Asia (covering four-wheeled motor vehicles) was 140.4 vehicles per 1,000 people, although disparities persist across the region. This was below the global average of 219 vehicles per 1,000 people in 2022, but above Asia's rate of 123 vehicles per 1,000 people in the 2016-2020 period.
- The bus sector in Asia has been in crisis, with bus manufacturing dropping 44% between 2015 and 2022, while manufacturing of other vehicle types rose 3%. The region experienced a 34% decline in bus ridership during this period.
- Motorised two- and three-wheelers comprise a significant share of vehicle fleets in Asia, particularly as shared modes become accessible through ride-hailing apps and offline.
- Regional production of bicycles (both regular and electric) has grown minimally since 2015. Revenue in Asia's bicycle market is projected to increase 2.55% annually between 2025 and 2029, from USD 21.3 billion to USD 23.6 billion.
- Maritime transport has played an important role in meeting the region's socio-economic and connectivity needs. The Asia-Pacific region vastly outperformed other world regions in the Liner Shipping Connectivity Index (LSCI) in 2023, with a score of 177, above the global average of 103. A total of 59 Asian ports ranked among the top 100 globally in the Container Port Performance Index.
- Air transport (domestic, regional and international) plays an important role in the Asian economy, employing 42 million people in 2023 and contributing USD 890 billion to the region's GDP. Air transport in Asia has undergone rapid expansion driven by rising middle-class demand, low-cost carrier networks and international tourism.
- Asia has firmly positioned itself as the global leader in electric vehicles and was home to 85% of the world's battery electric road vehicles in 2024. The region's imports of electric vehicles increased nine-fold between 2017 and 2023 – rising from USD 3 billion to USD 27 billion – while its share of the global electric vehicle export market grew from 27% to 34%. However, this leadership has not been shared equally shared among sub-regions and countries.
- While China dominated the electric vehicle uptake, India and Thailand have made significant strides in electric vehicle deployment through subsidies, domestic manufacturing and investment in charging networks. Across Asia, informal transport services carried out by two- and three-wheelers, jeepneys and other types of collective transport have been gradually electrifying.

Sustainability and climate trends

- In 2023, Asia's transport sector was responsible for around 6% of global greenhouse gas emissions and for around 40% of the world's transport greenhouse gas emissions (excluding international aviation and shipping). Since 2015, the region's transport greenhouse gas emissions have increased around 2% annually.
- Transport has become Asia's second fastest growing source of greenhouse gas emissions, surpassed only by the power sector. However, emission growth rates vary greatly across economies.
- Asian transport emissions increased 6.8% in 2023, adding 182 million tonnes of CO_2 equivalent to reach a record high of 2.87 gigatonnes of CO_2 equivalent, nearly the same level as in Europe and North America combined.
- Asia's per capita transport greenhouse gas emissions totalled 0.61 tonnes of CO_2 equivalent in 2023, below the levels in Europe (1.66 tonnes) and Latin America and the Caribbean (0.94 tonnes) but higher than in Africa (0.26 tonnes).
- Trends show signs of a decoupling between economic growth and transport emissions. Asia's transport emissions relative to economic output increased 3% in 2023 to reach 0.81 tonnes of CO_2 equivalent per USD 10,000, the third highest level among global regions but much lower than in Africa (1.29 tonnes) and Latin America and the Caribbean (1.12 tonnes). By 2022, high-income Asian economies had achieved "absolute" decoupling (where transport emissions fell even as GDP rose), and middle- and low-income countries

KEY FINDINGS

showed "relative" decoupling (with transport emissions rising, but more slowly than economic output).

- Freight transport is expected to contribute around 60% of the region's domestic transport emissions during the 2020-2030 period. Across Asia, urban freight accounted for only 15% of total freight activity, but it produced 43% of freight-related CO_2 emissions in 2022, due to frequent, small-batch deliveries in congested traffic.

- Road transport has fuelled the growth in Asia's transport emissions, responsible for 88% of the total in 2022. Other transport sub-sectors contributed much lower shares of transport emissions, including domestic aviation (5%), inland waterways (5%) and railways (1%).


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- Asia's transport sector accounted for 21% of the region's total primary energy use in 2022, and road transport consumed 83% of the transport sector's energy in 2020. Energy consumption in transport fell 0.2% annually from 2015 to 2021, spurred by energy efficiency improvements in railways linked to greater electrification.

- CO_2 emissions from Asia's rail sector grew 2% annually on average between 2000 and 2010, then fell 0.2% annually between 2010 and 2022. This decline in rail's emissions is attributed to increased rail electrification. As of 2024, 56% of rail tracks in Asia were electrified, up from 34% in 2000, and 60% of railway energy came from electricity.

- The transition to renewable energy in Asia's transport sector has been slower than in other sectors, with the share of renewables used in transport rising from 1.6% in 2015 to 3.0% in 2021. Fossil fuel use dominates, particularly in road transport. Most Asian countries still rely on a carbon-intensive power grid, resulting in the highest carbon intensity of electricity generation among global regions in 2023.

- Biofuels were the leading renewable energy source in transport in South-East Asia in 2023, supplying nearly 10% of road transport energy, well above the global average of 4%.

- Among cities across Asia, car commuters in Istanbul experienced the highest annual hours of traffic delay due to congestion (105 hours) in 2024, followed by Jakarta (89 hours) and Bangkok (74 hours).

- Transport-induced air pollution contributed roughly 8% of total air pollutant emissions in Asia, resulting in 3.2 premature deaths per 100,000 people in 2019, compared to global averages of 6% and 2.3 premature deaths. As of 2024, virtually the entire population in East Asia and in South-East Asia was living in areas where air pollution levels exceeded the World Health Organization's safe air standards.

- The enactment of vehicle emission standards and fuel quality standards has led to a 2% annual decrease in certain pollutants in Asia between 2000 and 2022. The share of vehicle registrations in Asian countries that have emission standards at the Euro 4 level or above increased from 9% in 2010 to 89% in 2023.

- Road safety remains a persistent public health challenge in Asia, where road deaths averaged 15.5 casualties per 100,000 people in 2021, above the global average of 15.0 casualties. In 2021, the region accounted for more than half the world's 1.19 million annual road traffic deaths, with 35% representing motorised two-wheeler users, followed by pedestrians at 22%.

- With rising motorisation, there is an urgent need to improve the region's infrastructure for walking and cycling.

- In the Asia-Pacific region, weather hazards related to climate change caused an estimated USD 12 billion in median yearly damage to transport assets (such as roads, railways and ports) – or 60% of the total global damage of USD 20 billion – according to research of 2019 and 2023. Railways shoulder around 25% of these losses.

- Despite bear the bulk of the world's damage to transport infrastructure from climate change, most Asian countries lack robust policies or financing for adaptation. Climate finance for transport heavily favours mitigation, with only 0.13% of transport-related climate finance in Asia in 2022 allocated to adaptation and only 0.06% to a combination of mitigation and adaptation.

KEY FINDINGS

Policy and investment developments

- As of 25 May 2025, only five countries in Asia – Japan, Maldives, Nepal, Singapore and the United Arab Emirates (UAE) – had submitted to the United Nations Framework Convention on Climate Change (UNFCCC) their third-generation Nationally Determined Contributions (NDCs) towards reducing emissions under the Paris Agreement. Among these, Nepal and the UAE were the only countries to include transport greenhouse gas mitigation targets in their NDCs.
- Some of the Asian NDCs include transport adaptation and resilience-related targets and measures that are reflective of existing climate finance flows. In 2022, only an estimated 0.13% of the committed funds for transport-related climate finance in the region were earmarked to support adaptation.
- As of 25 May 2025, 18 Asian countries had submitted to the United Nations their LT-LEDS (Long-Term Low Emission Development Strategies).
- Eleven Asian countries had submitted National Adaptation Plans (NAPs) to the UN as of 25 May 2025, with the majority identifying transport-specific adaptation strategies.
- In addition to national strategies, several Asian countries have strengthened their commitments through international decarbonisation frameworks.
- A growing number of Asian countries have developed strategies to enhance their climate adaptation and preparedness for natural disasters.
- Countries have increasingly recognised that developing efficient public transport networks is central to promoting access for Asia's growing urban populations.
- Since 2021, several countries in the region have advanced road safety through multi-year action plans.
- According to 2025 studies, national government spending on transport in Asia over a five-year period was only 1.5% of GDP on average, and countries with higher per capita GDPs allocated more resources to infrastructure maintenance. The Asian transport sector received 55% of global Official Development Assistance (ODA) from 2016 to 2023, up from 43% between 2011 and 2015.
- In 2023, fossil fuel subsidies in Asia totalled USD 865 per capita, just above the global average of USD 813 per capita, although some countries have taken steps to phase out, reduce or reform these policies. Asian fossil fuel subsidies are projected to increase 32% between 2023 and 2030, further undermining climate and sustainability efforts.

- The momentum around electric vehicle adoption in the region has been coupled with a growing body of policy initiatives, financing mechanisms, and infrastructure programmes at the national and sub-national levels.
- Several countries in Asia are advancing vehicle efficiency and fuel economy regulations to curb emissions, improve air quality and reduce fuel consumption. In parallel, a growing number of countries in the region have sought to increase the use of renewable energy as well as low-carbon fuels in transport.
- Although the aviation industry is an important driver of economic development and employment in Asia, its sustainability hinges on decarbonisation measures.
- For maritime transport, a growing number of Asian countries have embraced green shipping corridors and engaged in other emission reduction measures.
- Inland waterway transport had gained attention in countries with extensive river networks and coastlines.
- Although freight transport remains less prominent than passenger transport in many Asian NDCs, its profile has grown within national transport strategies.

Context, challenges and opportunities

Asia is a highly diverse region, hosting two of the world's largest economies (China and India) as well as low- and middle-income and extremely climate-vulnerable countries such as Afghanistan, Myanmar, Nepal and Timor-Leste. The region reflects varying levels of development, infrastructure, policy capacity and mobility patterns.

In 2022, low- and middle-income countries in Asia represented roughly half the world's population and global gross domestic product (GDP), yet they housed only around one-third of the world's surface infrastructure.[2] Although transport infrastructure development has increased greatly in recent years, it has been dominated by road transport and by a strong increase in private vehicle ownership. Expansion of transport infrastructure has been unevenly distributed, leaving many countries with inadequate access.

A large share of Asia's population – including the elderly, low-income groups and women – depends on walking, cycling and public transport for daily mobility.[3] Despite this, on average less than half (49.1%) of Asia's urban residents had convenient access to public transport in 2020, and only 40.8% of the rural population had access to primary and secondary roads.[4]

The share of women employed in Asia's transport and storage industries was 13.3% in 2023, well below the levels in North America (28.1%) and Europe (24.9%), and the second lowest share after Africa.[5] Limited access and safety of transport services are the greatest obstacles to labor participation in low- and middle-income countries of the region. Women rely more on walking and informal transport than men do.[6]

Since 2015, the implementation of national policies and actions has greatly improved Asia's transport emissions outlook. Even so, the region's transport greenhouse gas emissions increased 6.8% in 2023, reaching a record high of 2.8 gigatonnes of carbon dioxide (CO_2) equivalent, nearly the same as in Europe and North America combined.[7] Asia contributed around 40% of global transport emissions in 2023, underscoring the region's crucial role in transport decarbonisation and sustainability.[8] Passenger and freight transport demand in Asia are projected to double or even triple between 2020 and 2050.[9] Under current policies, the region's transport emissions could reach 4 gigatonnes of CO_2 by 2050, well short of the 0.3 to 1 gigatonnes required to meet the emission reduction goals of the Paris Agreement.[10]

Further compounding Asia's transport sector challenges are strong dependence on imported fossil fuels, slow uptake of renewables in transport and limited progress in reducing fossil fuel subsidies. In many countries, a large share of foreign exchange is spent on importing vehicles and fossil fuels, straining national budgets and underscoring the urgent need for multi-modal transport planning and fuel efficiency.[11] Renewable energy use in the region's transport sector ranged from 12.9% in Indonesia to 0% in Saudi Arabia in 2022.[12] Asia remained the region with the highest carbon intensity of electricity generation, despite some improvement since 2015.[13] Overall, regional progress on sustainable, low-carbon transport has been impeded by inadequate national policy frameworks and insufficient financing.

Asia has established itself as an epicentre of electric mobility globally, accounting for 60% of the global increase in electric vehicles and 90% of growth in electric buses from 2015 to 2023, driven largely by China's market leadership.[14] In 2024, 85% of the world's battery-electric road vehicles were in Asia.[15] In recent years, India, Indonesia and Viet Nam all have introduced ambitious policies to scale up the use of electric vehicles (especially two- and three-wheelers) and public transport.

Given the region's vulnerability to the impacts of climate change, Asia has already felt the significant financial burden of multi-hazard damage to surface transport infrastructure. As of 2019 research, the Asia-Pacific region suffered an estimated USD 12 billion in median yearly damage to transport assets (such as roads, railways and ports), or 60% of the global total.[16] The COVID-19 pandemic had lasting effects on Asia's economies and transport, which are reflected in trade disruptions, reduction in public-private partnership investments and decreased public transport use, putting additional pressure on investments for sustainable transport.[17]

Asia has made important advances towards reducing transport-related air pollution and road fatalities.[18] Even so, transport-induced air pollution remains a leading health hazard in the region, responsible for roughly 8% of total air pollutant emissions and causing 3.2 premature deaths per 100,000 people in 2019.[19] Road safety remains a concern in Asia, which recorded 15.5 road casualties per 100,000 people in 2021, above the world average.[20]

Efforts to decarbonise and enhance the sustainability of Asia's transport sector must be pursued alongside infrastructure expansion and a rise in passenger and freight activity to accommodate economic growth. This calls for tailored approaches to transforming transport that cater to local contexts and needs – economic, social and infrastructural – while integrating broader sustainable development objectives.

Demand, use and access

In 2023, Asia was home to more than half (58%) of the world's population and accounted for 47% of global GDP.[21] **However, the region housed only 38% of the world's transport infrastructure that year.**[22] The transport sector employed 148 million people, or 7% of the region's total workforce, in 2023.[23] Yet the share of women employed in the transport and storage industries in Asia was only 13.3%, well below the levels in North America (28.5%), Oceania (23.3%) and Europe (22.3%) in 2023.[24]

Around 60% of Asia's rural population lacked access to all-weather roads network as of 2019, impeding connectivity and limiting access to economic opportunities.[25] **Access levels varied widely across countries:** whereas 78% of Lebanon's rural population lived within 2 kilometres of an all-season primary and secondary road, only 5.1% of Turkmenistan's did.[26]

Although more than half (52%) of Asia's population resided in cities in 2023, slightly less than half (49.1%) of the region's urban population on average had convenient access to public transport (compared with a global average of 52%).[27] **Levels ranged from 99.9% in Singapore to only 7.3% in Jordan.**[28] **A 2024 assessment found that a third of Asian countries (31%) had set targets to enhance public transport, introducing bus rapid transit systems or urban rail.**[29]

As of 2023, only 24% of cities in Asia were providing at least half of their population with access to essential services (such as health care and education) within a 1-kilometre walking distance, compared to 39% of around 1,000 cities globally.[30] **Walking and cycling are on the decline in Asian cities, as data from 2018 to 2023 showed a shift to motorcycles and cars.**[31] Walking is a critical enabler of public transport access, and its integration with public transport is a key strategy for reducing private car use.[32]

Despite considerable expansion of bus rapid transit systems across the region – from around 9,400 kilometres in 118 cities in 2015 to 15,800 kilometres in 154 cities in 2021 – their availability has lagged compared to high-income countries, and the bus sector has continued to face challenges.[33] Overall, Asia's urban public transport infrastructure tripled between 2000 and 2022.[34]

In 2023, less than 20% of the population across most of Asia lived within 300 metres of a physically protected bikeway.[35] This was above the world average of 5% but well below the shares of top-performing cities in 2023, all of which were in Europe.[36]

- China led the region in the share of people living near protected bikeways in 2023, with several cities exceeding the Asian average, including Sucheng District area at 40% and Ma On Shan area at 38%.[37]
- In Tel Aviv (Israel), 30% of residents lived close to protected bikeways in 2023, whereas the share in Jeonju (Republic of Korea) was 25%.[38]

Progress in enhancing freight transport and logistics performance has been uneven across Asia, with China, India, Indonesia, Thailand, and Viet Nam making strides, while other countries lagged.[39] Freight demand by road increased 21% and by rail increased 15% between 2015 and 2020, due to the expansion of infrastructure networks and economic development.[40] Inland waterways and domestic shipping are important modes of freight transport in most Asian countries (aside from the landlocked central Asian countries), and their share is projected to increase from 45% in 2020 to 50% in 2030 thanks to modal shift policies and infrastructure investments.[41]

Freight transport in Asian cities grew an estimated 20% in 2020, driven by a surge in e-commerce and online deliveries, particularly by couriers, forwarders and parcel-delivery services.[42] Although this growth has given rise to innovative solutions such as cargo bikes and scooters for last-mile deliveries, trucks and vans still dominate urban freight operations in the region.[43] Under current policies, urban freight demand in Asia could grow 3.7% annually between 2020 and 2050, overtaking the growth in urban passenger transport demand (2.1%).[44]

Passenger transport demand in Asia fell temporarily in 2020 due to the effects of the COVID-19 pandemic, but by 2023 the sector had recovered to surpass 2018 levels in most sub-regions, except the Pacific.[45] Lockdowns and other pandemic-related measures to contain the spread of coronavirus severely restricted transport and mobility. As in other global regions, passenger transport demand was more heavily impacted than freight demand across Asia.

- Metro ridership across Asia fell 32% on average in 2021, compared to a 63% drop in North America and a 40% decline globally.[46]
- Air travel was the transport mode most severely affected by COVID-19 travel restrictions in Asia, falling nearly 50% between 2015 and 2020; however, it has since recovered to pre-pandemic levels.[47]
- Asia ranked second among global regions in public transport ridership growth in 2024, after the Middle East and North Africa.[48]

Passenger and freight transport demand in Asia is projected to double or even triple between 2020 and 2050.[49] This very high growth trajectory implies that Asia alone could be


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responsible for roughly half of the global increase in transport demand during this period.[50] Trends point towards substantial growth in Asian transport activity, potentially outpacing population and infrastructure growth.

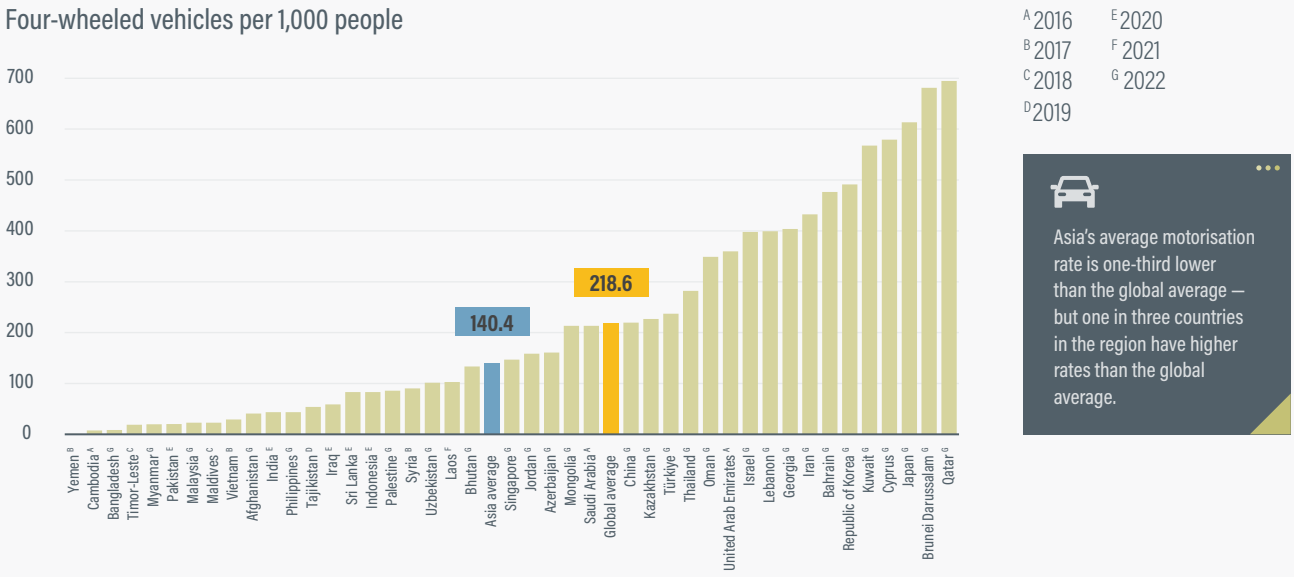
Asia has experienced tremendous development in transport infrastructure in recent years, driven by economic growth, transport demand, trade flows, regional connectivity needs and urbanisation. Roads accounted for the vast majority (98%) of the region's surface transport infrastructure during 2021-2023, whereas railways made up 2% and urban rapid transit systems a mere 0.1%.[51] **Funding for road infrastructure has outweighed that for rail infrastructure in Asia, despite substantial (yet uneven) growth in rail across countries.** Between 2010 and 2022, the region's road infrastructure length expanded 2.5% annually, greatly outperforming the growth of rail.[52]

In 2023, the transport infrastructure density in Asia was 433 kilometres per 1,000 square kilometres, well below the density for countries in the Organisation for Economic Co-operation and Development (OECD), at 690 kilometres per 1,000 square kilometres.[53] **Asia's road transport infrastructure, at 10 kilometres of road per 1,000 people, was below the global average of 11 kilometres of road per 1,000 people in 2022.**[54] By country, road infrastructure in the region ranged from well above the global average in Mongolia (32.9 kilometres per 1,000 people) and Bhutan (23.4 kilometres), to well below the Asian average in Bangladesh (0.9 kilometres) and Pakistan (1.1 kilometres).[55]

Asia has experienced steady growth in rail infrastructure since 2015, accounting for 75% of the global growth in railways between 2015 and 2021.[56] **The region's railway infrastructure expanded by around 116,000 kilometres between 2010 and 2021.**[57] China has continued to expand the rail network by improving regional connectivity, reducing travel times, and enabling cross-continental rail freight activities.[58]

- Sri Lanka added 344 kilometres of heavy railway routes between 2008 and 2021, reflecting annual growth of 1.9%.[59] It was among the region's top performers in the density of its railway network, with 26 kilometres of rail per 1,000 square kilometres in 2021.[60]
- As of early 2025, China's railway network exceeded 162,000 kilometres, including 48,000 kilometres of high-speed rail (the largest such network in the world).[61]
- Operating since 2011, the total number of freight trains traveling between China and Europe surpassed 100,000 in 2024.[62]

FIGURE 1. Motorisation rates per 1,000 people in Asia, various years



Asia's average motorisation rate is one-third lower than the global average — but one in three countries in the region have higher rates than the global average.

Source: See endnote 65 for this section.

Growth in the region's road transport infrastructure has been greatly outpaced by the surge in private vehicle ownership, which grew 7.3% annually between 2010 and 2022.[63] A staggering 1 billion vehicles were added to Asia's roads between 2000 and 2023, mirroring the region's rising motorisation rates.[64]

In 2022, the average motorisation rate in Asia (covering four-wheeled motor vehicles) was 140.4 vehicles per 1,000 people, although disparities persist across the region (Figure 1).[65] **This was below the global average of 219 vehicles per 1,000 people in 2022, but above Asia's rate of 123 vehicles per 1,000 people in the 2016-2020 period.**[66] Motorisation growth has been driven by rising incomes, the explosion in private car ownership, and continued low levels of accessibility to public transport services in both urban and rural areas. These trends have put immense pressure on the region's road infrastructure to sustain a rapidly growing vehicle fleet.[67]

- The highest motorisation rates in Asia in 2022 were in Qatar (694.9 vehicles per 1,000 people) and Brunei Darussalam (681.2 vehicles), both of which were well above the global average.[68]
- The region's lowest motorisation rates were in Yemen (0.9 vehicles per 1,000 people in 2017) and Cambodia (7.6 vehicles per 1,000 people in 2016); more recent data are lacking due to challenges with data availability and collection across the region.[69]

The bus sector in Asia has been in crisis, with bus manufacturing dropping 44% between 2015 and 2022, while manufacturing of other vehicle types rose 3%.[70] **The region experienced a 34% decline in bus ridership during this period.**[71] These trends suggest a shifting preference away from buses, despite policy measures to improve public transit since 2015.[72]

- Annual production of buses and motor coaches in China declined from 140,686 units in 2019 to 89,008 units in 2022, and in Japan it fell from 123,097 units in 2017 to 84,611 units in 2022.[73]
- Imports of buses in Asia grew 7% between 2015 and 2023, compared to a 53% increase in imports of other vehicles.[74]
- Bus registrations in Asia increased 16% between 2015 and 2022, while registrations of other vehicles grew 56%.[75]

Motorised two- and three-wheelers comprise a significant share of vehicle fleets in Asia, particularly as shared modes become accessible through ride-hailing apps and offline. These vehicles often operate within the informal economy. Given the prevalence, high annual mileage, and operating patterns of motorised two- and three-wheelers, many governments across the region are looking to transition them to cleaner vehicles to reduce emissions and pollution in urban areas.

Regional production of bicycles (both regular and electric) has grown minimally since 2015.[76] **Revenue in Asia's**

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bicycle market is projected to increase 2.55% annually between 2025 and 2029, from USD 21.3 billion to USD 23.6 billion.[77] This growth is driven mainly by China, where bicycle revenues were expected to total USD 12 billion in 2025.[78]

Maritime transport has played an important role in meeting the region's socio-economic and connectivity needs. The Asia-Pacific region vastly outperformed other world regions in the Liner Shipping Connectivity Index[i] **(LSCI) in 2023, with a score of 177, above the global average of 103.**[79] **A total of 59 Asian ports ranked among the top 100 globally in the Container Port Performance Index.**[80]

- China had the region's highest LSCI score in the second quarter of 2023, followed by the Republic of Korea, Singapore and Malaysia.[81]
- Between 2015 and 2023, Viet Nam improved its LSCI score by more than 50%.[82]
- In East Asia alone, 36 ports ranked among the global top 100 in port performance, underscoring the sub-region's significance in global trade and the maritime sector.[83]

Air transport (domestic, regional and international) plays an important role in the Asian economy, employing 42 million people in 2023 and contributing USD 890 billion to the region's GDP.[84] **Air transport in Asia has undergone rapid expansion driven by rising middle-class demand, low-cost carrier networks and international tourism.** The number of flights per 1,000 people in the region increased from 1.0 in 2001 to 2.9 in 2019, then falling to 1.8 in 2020 during the COVID-19 pandemic.[85] The Asia-Pacific region recorded its strongest annual increase in passenger traffic in 2024, at 16.9% (above the global average of 10.4%), driven mainly by strong domestic markets in China and India, although international travel in the region remained below 2019 levels.[86]

Asia has firmly positioned itself as the global leader in electric vehicles and was home to 85% of the world's battery electric road vehicles in 2024.87 The region's imports of electric vehicles increased nine-fold between 2017 and 2023 – rising from USD 3 billion to USD 27 billion – while its share of the global electric vehicle export market grew from 27% to 34%.88 However, this leadership has not been shared equally shared among sub-regions and countries.[89]

- In the Asia-Pacific region, electric vehicles accounted for 16% of motorised two- and three-wheelers (a total of 77 million), 11% of buses (726,200), 6.7% of cars (35 million), 2.2% of vans (1.3 million) and 0.8% of trucks (377,200) in 2024.[90]
- China continued to dominate electric bus exports, with 15,000 units exported in 2024, a 25% increase from 2023.[91]

i A comprehensive tool for quantifying a nation's integration into the global maritime network, which provides a standardised metric to assess a country's access to and efficiency within international liner shipping.

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Chinese manufacturers provided 80% of electric buses operating in Latin America and the Caribbean in 2024, and China's Yutong was the best-selling electric bus company in Europe between 2022 and 2024.[92]

While China dominated the electric vehicle uptake, India, Indonesia, Thailand and Viet Nam have made significant strides in electric vehicle deployment through subsidies, domestic manufacturing and investment in charging networks.[93] **Across Asia, informal transport services carried out by two- and three-wheelers, jeepneys and other types of collective transport have been gradually electrifying.**[94] Wider adoption of electric vehicles in many Asian low- and middle-income countries has been hampered by high upfront costs, limited awareness of alternative transport modes, inadequate charging infrastructure and limited technical capacity.[95]

- India has made important advances in the uptake of electric vehicles, notably through its ambitious electric bus programme, high fuel quality standards and policies under the Faster Adoption and Manufacturing of Electric Vehicles (FAME) scheme.[96] India is the second largest market for electric two-wheelers globally, with annual sales expected to increase from 1 million units in 2023 to 7-9 million units in 2030.[97]
- Electric two-wheeler sales in South-East Asia are projected to reach 3-4 million units in 2030.[98]
- Spurred by a strong policy framework, Thailand has led the electric vehicle transition in South-East Asia, with a 10.8% adoption rate for battery electric vehicles in 2023.[99] In 2025, Bangkok announced that it would retire 60% of its 2,300 combustion engine buses and replace them with electric buses by 2029.[100]
- Viet Nam doubled its sales of battery electric cars in 2024, with sales of 69,000 units (17% of total car sales), while sales of electric two-wheelers reached 250,000 (a near 10% sales share).[101] Viet Nam laid important groundwork in 2024 by developing a strategic framework to transition to electric vehicles.[102]

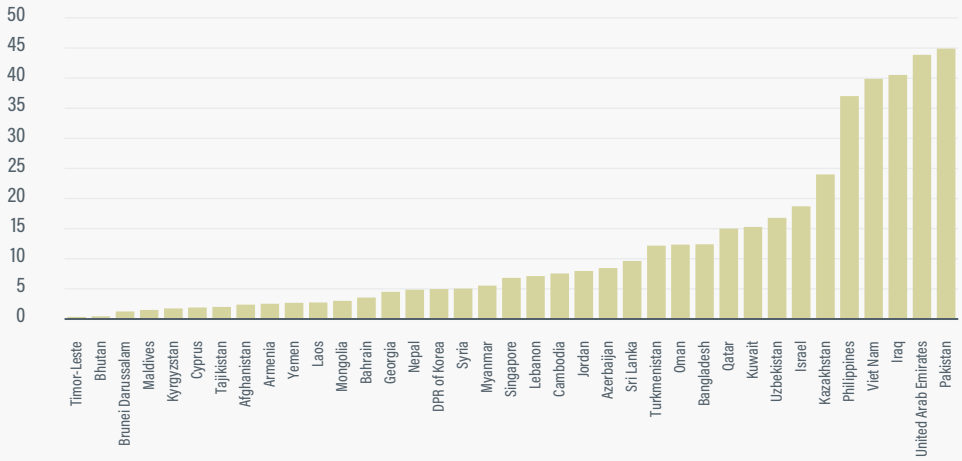
Sustainability and climate trends

In 2023, Asia's transport sector was responsible for around 6% of global greenhouse gas emissions and for around 40% of the world's transport greenhouse gas emissions (excluding international aviation and shipping).[103] **Since 2015, the region's transport greenhouse gas emissions have increased around 2% annually.**[104] This contrasts with the near-stagnant growth in transport emissions in Europe and North America (0.3%) and the slow annual increases in Latin America and the Caribbean (0.5%) and Africa (1.3%).[105]

Transport has become Asia's second fastest growing source of greenhouse gas emissions, surpassed only by the power sector.[106] **However, emission growth rates vary greatly across economies.** In Malaysia (an upper-middle-income country), transport emissions grew only 1% annually since 2015, whereas in Cambodia they grew 8% annually.[107] The share of high-income economies in total transport emissions fell from 36% in 2000 to 16% in 2022, confirming that their emission growth intensity has been much lower than in low- and middle-income economies.[108]

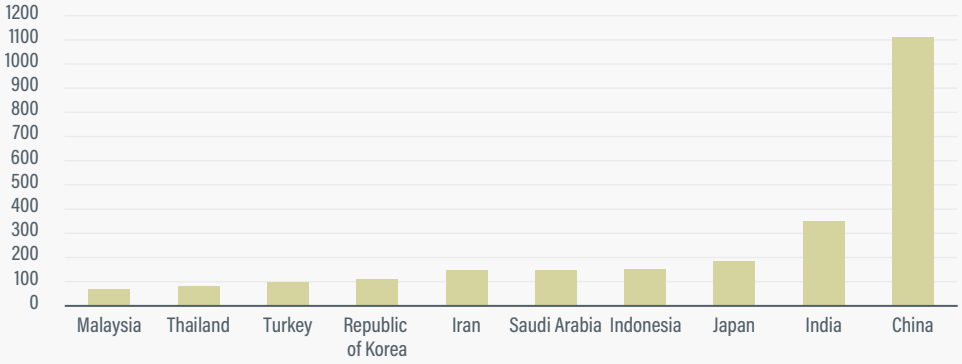
FIGURE 2. Transport greenhouse gas emissions in Asia, 2023

Asian countries with transport greenhouse gas emissions with less than 50 million tonnes, 2023



Transport greenhouse gas emissions in Asia vary widely. China alone emits more than 43 of the region's 46 countries combined (except India, Indonesia and Japan).

Asian countries with transport greenhouse gas emissions with more than 50 million tonnes, 2023



Transport greenhouse gas emissions in Asia vary widely. China alone emits more than 43 of the region's 46 countries combined (except India, Indonesia and Japan).

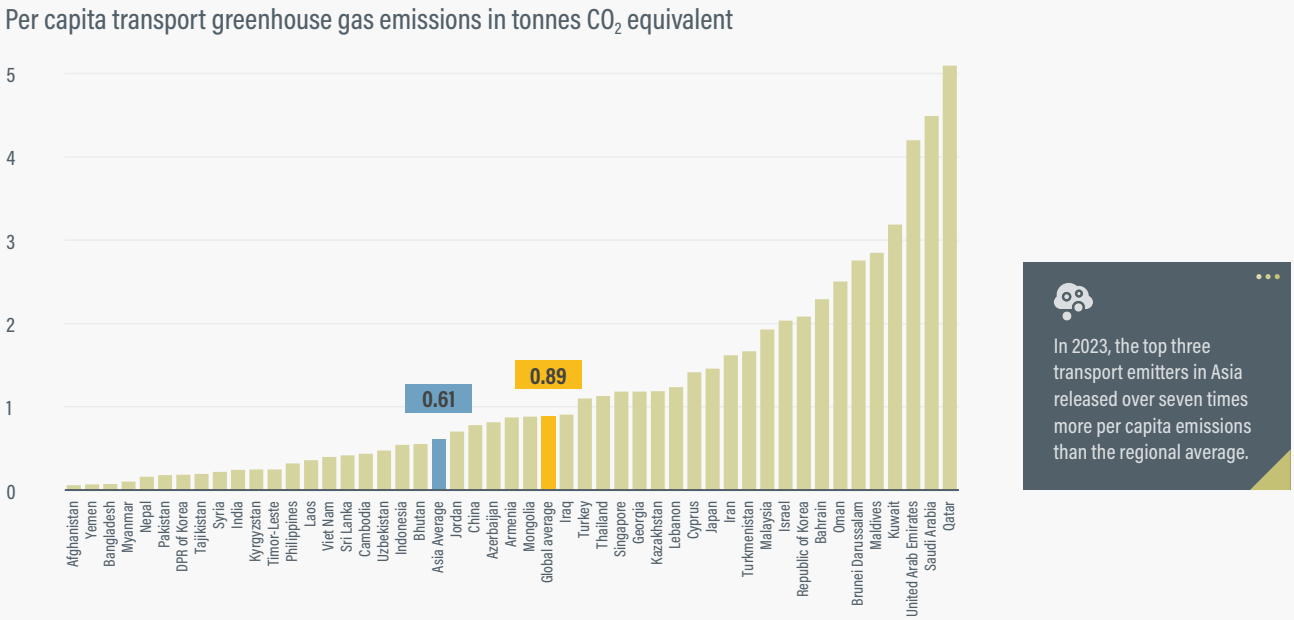
Source: See endnote 110 for this section.

Asian transport emissions increased 6.8% in 2023, adding 182 million tonnes of CO_2 equivalent to reach a record high of 2.87 gigatonnes of CO_2 equivalent, nearly the same level as in Europe and North America combined.[109] China was responsible for most of these emissions (1,110.2 million tonnes of CO_2 equivalent), followed distantly by India (349.3 million tonnes) and Japan (182 million tonnes) (Figure 2).[110] The region's lowest transport emissions were in Timor-Leste (0.3 million tonnes) and Bhutan (0.4 million tonnes).[111]

Asia's per capita transport greenhouse gas emissions totalled 0.61 tonnes of CO_2 equivalent in 2023 (Figure 3)**, below the levels in Europe (1.66 tonnes) and Latin America and the Caribbean (0.94 tonnes) but higher than in Africa (0.26 tonnes).**[112] With its high motorisation rate, Qatar was the region's highest per capita transport emitter at 5.1 tonnes in 2023, followed by Saudi Arabia (4.5 tonnes) and the United Arab Emirates (UAE) (4.2 tonnes).[113] The region's lowest per capita transport emissions were in Afghanistan (0.06 tonnes) and Yemen (0.07 tonnes), reflecting low motorisation rates and underdeveloped road and public transport networks.[114]

Trends show signs of a decoupling between economic growth and transport emissions. Asia's transport emissions relative to economic output increased 3% in 2023 to reach 0.81 tonnes of CO_2 equivalent per USD 10,000, the third highest level among global regions but much lower than in Africa (1.29 tonnes) and Latin America and the Caribbean (1.12 tonnes).[115] **By 2022, high-income Asian economies had achieved "absolute" decoupling (where transport**

FIGURE 3. Per capita transport greenhouse gas emissions in Asia, 2023



In 2023, the top three transport emitters in Asia released over seven times more per capita emissions than the regional average.

Source: See endnote 112 for this section.

emissions fell even as GDP rose), and middle- and low-income countries showed "relative" decoupling (with transport emissions rising, but more slowly than economic output).[116] These trends are driven by factors such as slower growth in emissions than economic growth, increased vehicle efficiency and greater electric vehicle adoption.[117]

Freight transport is expected to contribute around 60% of the region's domestic transport emissions during the 2020-2030 period.[118] **Across Asia, urban freight accounted for only 15% of total freight activity, but it produced 43% of freight-related CO_2 emissions in 2022, due to frequent, small-batch deliveries in congested traffic.**[119] Freight also contributes to traffic delays and pollution, with high economic costs and health impacts. The freight sector, particularly urban freight, has been under-emphasised in many national climate and sustainable development strategies.

Road transport has fuelled the growth in Asia's transport emissions, responsible for 88% of the total in 2022.[120] **Other transport sub-sectors contributed much lower shares of transport emissions, including domestic aviation (5%), inland waterways (5%) and railways (1%).**[121] Between 2000 and 2022, emissions from road transport increased 3.2% annually, compared with 2.9% for domestic aviation, 2.5% for domestic navigation and 0.7% for rail transport.[122] Road transport accounted for up to 73% of Myanmar's transport emissions and 100% of Kazakhstan's in 2022.[123] This dependence on carbon-intensive road transport modes can be attributed to heavy reliance on oil products, rapid growth in private vehicles and inadequate access to public transport.[124]

Asia's transport sector accounted for 21% of the region's total primary energy use in 2022, and road transport consumed 83% of the transport sector's energy in 2020.[125] **Energy consumption in transport fell 0.2% annually from 2015 to 2021, spurred by energy efficiency improvements in railways linked to greater electrification.**[126]

CO_2 emissions from Asia's rail sector grew 2% annually on average between 2000 and 2010, then fell 0.2% annually between 2010 and 2022.[127] **This decline in rail's emissions is attributed to increased rail electrification.**[128] **As of 2024, 56% of rail tracks in Asia were electrified, up from 34% in 2000, and 60% of railway energy came from electricity.**[129] China and India together account for the majority of Asia's rail network and have led aggressive electrification programmes.

- Between 2000 and 2023, the length of electrified rail routes increased substantially in China (up 800% to reach 119,400 kilometres) and achieving around 75% railway electrification in 2023.[130]
- As of March 2025, 98% of India's rail network was electrified, expanding by more than 4,500 kilometres annually between 2014 and early 2025.[131]

The transition to renewable energy in Asia's transport sector has been slower than in other sectors, with the share of renewables used in transport rising from 1.6% in 2015 to 3.0% in 2021.[132] **Fossil fuel use dominates, particularly in road transport.**[133] **Most Asian countries still rely on a carbon-intensive power grid, resulting in the highest carbon intensity of electricity generation among global regions in 2023** – at 559.5 grams of CO_2 equivalent per kilowatt-hour – despite falling 1.6% on average since 2015.[134] As of mid-2025, China derived 18% of its electricity from solar and wind, while India reached 10%, limiting the full emission-reduction potential of transport electrification.[135]

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Biofuels were the leading renewable energy source in transport in South-East Asia in 2023, supplying nearly 10% of road transport energy, well above the global average of 4%.[136] This trend is supported by long-standing blending mandates and a maturing palm oil biodiesel industry, especially in Indonesia and Thailand.[137]

Among cities across Asia, car commuters in Istanbul experienced the highest annual hours of traffic delay due to congestion (105 hours) in 2024, followed by Jakarta (89 hours) and Bangkok (74 hours).[138] Congestion, delays and excessive fuel consumption related to rising road traffic all contribute to higher vehicle emissions and lower quality of life.

Transport-induced air pollution contributed roughly 8% of total air pollutant emissions in Asia, resulting in 3.2 premature deaths per 100,000 people in 2019, compared to global averages of 6% and 2.3 premature deaths.[139] **As of 2024, virtually the entire population in East Asia and in South-East Asia was living in areas where air pollution levels exceeded the World Health Organization's safe air standards.**[140] Asia's transport sector generates further societal costs in the form of noise pollution, road fatalities, ecosystem degradation and loss of agricultural land, among others.

- In 2024, cities across South and Central Asia dominated the global rankings for air pollution from particulate matter (PM) 2.5.[141] The most polluted cities included Byrnihat, Delhi and Mullanpur in India; Lahore and Dera Ismail Khan in Pakistan; and Karaganda (Kazakhstan).[142]
- Among the cleanest urban air in the region was in Kashiwazaki, Sumoto, and Kushiro in Japan, and in Tra Vinh (Viet Nam).[143]

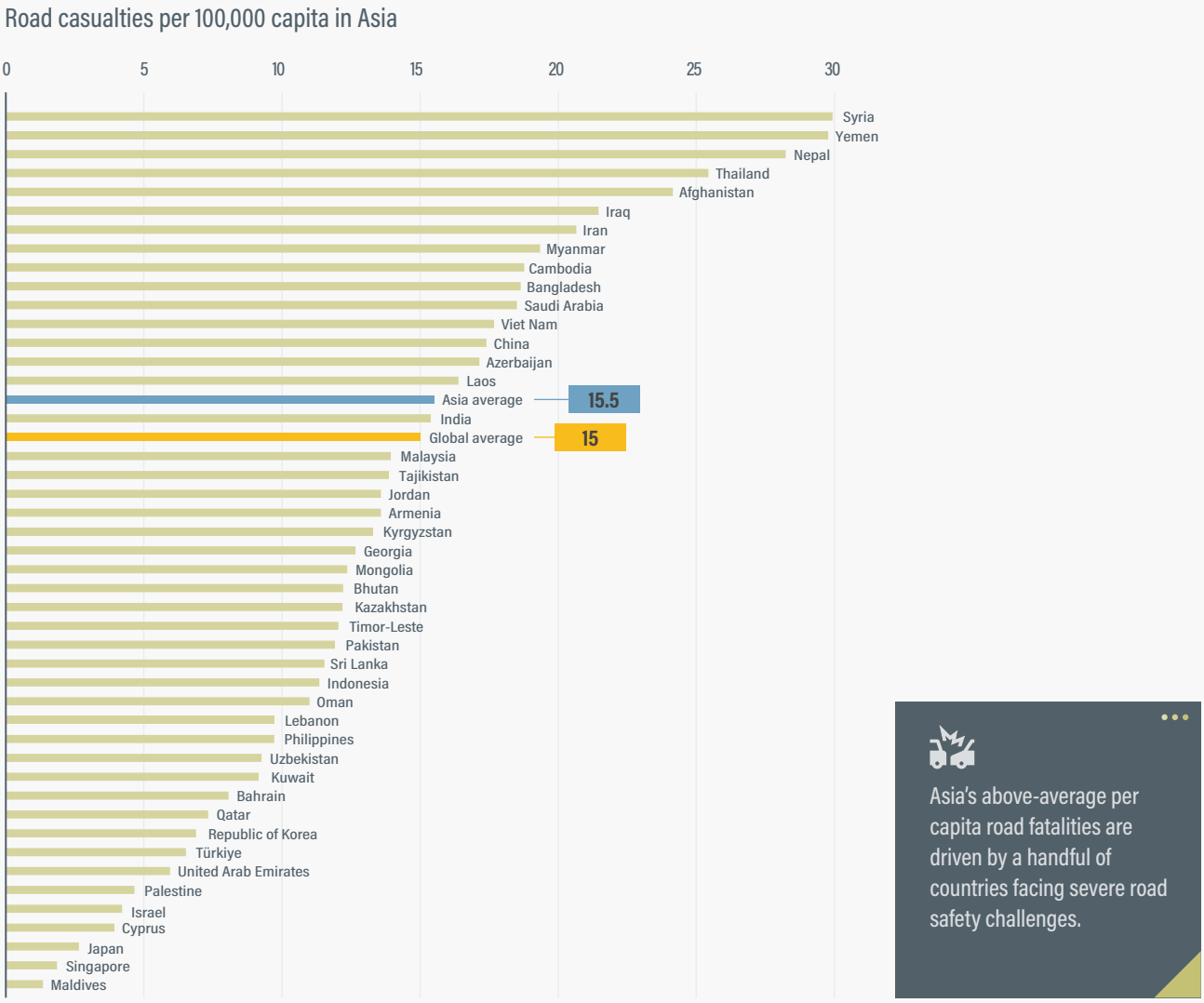
The enactment of vehicle emission standards and fuel quality standards has led to a 2% annual decrease in certain pollutants in Asia between 2000 and 2022.[144] **The share of vehicle registrations in Asian countries that have emission standards at the Euro 4 level or above increased from 9% in 2010 to 89% in 2023.**[145] However, rising emissions from other transport modes, such as domestic waterways and shipping, has undermined progress.[146]

Road safety remains a persistent public health challenge in Asia, where road deaths averaged 15.5 casualties per 100,000 people in 2021, above the global average of 15.0 casualties (Figure 4).[147] **In 2021, the region accounted for more than half the world's 1.19 million annual road traffic deaths, with 35% representing motorised two-wheeler users, followed by pedestrians at 22%.**[148]

- Syria had the region's highest level of road casualties, at 29.93 deaths per 100,000 people in 2021, whereas Maldives had the lowest at 1.34 per 100,000 people.[149]

With rising motorisation, there is an urgent need to improve the region's infrastructure for walking and cycling.[150] In 2021, less than 20% of roads assessed in Asia met the recommended three-star or better safety standard for pedestrians and cyclists; the share was less than 25% for motorcyclists and less than 40% for vehicle occupants, underscoring a widespread lack of safe road design.[151] South Asia and South-East Asia have especially high-risk road networks.[152]

FIGURE 4. Road casualties per 100,000 people in Asia, 2021



Asia's above-average per capita road fatalities are driven by a handful of countries facing severe road safety challenges.

Source: See endnote 147 for this section.

In the Asia-Pacific region, weather hazards related to climate change caused an estimated USD 12 billion in median yearly damage to transport assets (such as roads, railways and ports) – or 60% of the total global damage of USD 20 billion – according to research of 2019 and 2023.[153] **Railways shoulder around 25% of these losses,** despite accounting for only around 2% of Asia's total transport infrastructure.[154]

- Pakistan ranked 26th out of 208 countries in national road vulnerability in 2023 and faces significant climate risks, with average annual losses to transport infrastructure estimated at USD 218.7 million in 2023.[155]
- Bangladesh, where 9% of the population lived in low-elevation coastal zones as of 2023, the average annual loss to transport infrastructure due to climate-related hazards in 2023 was USD 178.95 million, equivalent to 0.01% of the GDP; this loss is concentrated in roads (79%), followed by rail (14%), airports (5%) and ports (2%).[156]

Despite bear the bulk of the world's damage to transport infrastructure from climate change, most Asian countries lack robust policies or financing for adaptation. Climate finance for transport heavily favours mitigation, with only 0.13% of transport-related climate finance in Asia in 2022 allocated to adaptation and only 0.06% to a combination of mitigation and adaptation.[157] The gap between rising climate risks and limited transport adaptation measures leaves critical infrastructure exposed, particularly in coastal and flood-prone areas.[158]

Policy and investment developments

As of 25 May 2025, only five countries in Asia – Japan, Maldives, Nepal, Singapore and the United Arab Emirates (UAE) – had submitted to the United Nations Framework Convention on Climate Change (UNFCCC) their third-generation Nationally Determined Contributions (NDCs) towards reducing emissions under the Paris Agreement.[159] **Among these, Nepal and the UAE were the only countries to include transport greenhouse gas mitigation targets in their NDCs.**

- Nepal's 2025 NDC extends the country's previous targets for electric vehicle share from 2030 to 2035, and commits to reduce transport greenhouse gas emissions by 1,426.22 gigagrams of CO_2 equivalent by 2030 and 2,731.57 gigagrams by 2035.[160]
- The NDC of the UAE sets a target to reduce transport greenhouse gas emissions at least 20% below 2019 levels by 2035, to reach 24.2 million tonnes of CO_2 equivalent; it touches on all three pillars of the "Avoid-Shift-Improve" (A-S-I) Framework, with plans to enhance walking and public transport use and to improve vehicle energy efficiency while promoting wider adoption of electric vehicles.[161]
- Japan's NDC of 2025 sets targets to reduce economy-wide emissions 60% below 2013 levels by 2035, 75% by 2040 and net zero by 2050.[162] However, analysis suggests that Japan would need to reduce its emissions 81% below 2013 levels (from all sectors, including land use and forestry) to align with Paris Agreement goals.[163] Japan's NDC does not include sector-specific commitments, which are to be elaborated in an upcoming national "Plan for Global Warming Countermeasures".[164]

The NDCs of the UAE (2024) and Singapore (2025) establish direct links between the outcomes of the First Global Stocktake (GST) on the implementation of the Paris Agreement, and take a comprehensive approach to sustainable transport activities, including through developing walking, cycling and public transport infrastructure and rapid deploying zero- and low-emission vehicles.[165]

Some of the Asian NDCs include transport adaptation and resilience-related targets and measures that are reflective of existing climate finance flows. In 2022, only an estimated 0.13% of the committed funds for transport-related climate finance in the region were earmarked to support adaptation, and only 0.06% of funds were earmarked for actions with multiple objectives, including mitigation and adaptation.[166]

- The UAE's NDC of 2024 acknowledges the importance of climate-proofing infrastructure, including through its design, location, construction, operation and maintenance. The UAE is preparing a roadmap covering all aspects of the urban environment (including sustainability guidelines for roads and other infrastructure), investing in research and development of climate-resilient construction materials and developing infrastructure proofed against sea-level rise.[167]
- The Maldives aims to ensure climate-proof infrastructure and facilities, particularly critical infrastructure such as airports, maritime ports, powerhouses and utilities.[168]

For the latest analysis of transport commitments in NDCs, including those expected ahead of COP 30, see the NDC Transport Tracker by GIZ and SLOCAT*, a database on ambition, targets and policies in NDCs and Long-Term Strategies.*169

As of 25 May 2025, 18 Asian countries had submitted to the United Nations their LT-LEDS (Long-Term Low Emission Development Strategies).[170] LT-LEDS complement NDCs and reflect countries' strategies to 2050 and beyond.[171] Between 2023 and March 2025, a total of nine Asian countries (Armenia, Bhutan, Cyrus, Georgia, Kazakhstan, Oman, Sri Lanka, Türkiye and United Arab Emirates) submitted LT-LEDS.

- Kazakhstan's LT-LEDS of 2024 outlines actions across all components of the A-S-I Framework; the country aims to pursue the efficient management of passenger and freight traffic, enhance public transport systems, promote efficient urban planning to reduce the need for vehicle trips, and encourage the widespread use of alternative fuels and large-scale electrification of transport.[172]
- Bhutan's LT-LEDS of 2023 aims to reduce greenhouse emissions from surface transport through both demand and supply side management; sets a target to transition 100% of light vehicle and bus sales to electric vehicles by 2045 and 25% of heavy vehicle (freight) imports to electric vehicles by 2050, and encourages the use of shared mobility, public transport and non-motorised transport.[173]

Eleven Asian countries had submitted National Adaptation Plans (NAPs) to the UN as of 25 May 2025, with the majority identifying transport-specific adaptation strategies.[174] NAPs support countries, especially developing and least-developed countries, in planning and implementing medium- and long-term adaptation to climate change.

- Bangladesh's NAP of 2023 sets out to improve urban environments and drainage systems through interventions linked to the expansion and conservation of green and blue infrastructure as well as the promotion of environmentally friendly vehicles and mass transit.[175]
- The Philippines' NAP of 2024 highlights comprehensive planning and response mechanisms and sufficient capacity as key adaptation priorities to ensure resilient,

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sufficient and sustainable transport infrastructure and related services; concrete measures include factoring in climate risk when planning roadways and transport hubs, and climate-proofing critical transport infrastructure (e.g., through landslide protection measures).[176]

- Thailand's NAP of 2024 underlines mixed-use developments to discourage reliance on long-distance transport.[177]

In addition to national strategies, several Asian countries have strengthened their commitments through international decarbonisation frameworks.

- At the 2023 UN Climate Change Conference (COP 28), Israel joined the Global Memorandum of Understanding on Zero-Emission Medium- and Heavy-Duty Vehicles, committing to 100% zero-emission new truck and bus sales by 2040.[178]
- Multiple Asian governments (Armenia, Azerbaijan, Israel and Türkiye) as well as sub-national governments in India, Japan and the Republic of Korea participate in the Accelerating to Zero (A2Z) Coalition, which supports the global transition to 100% zero-emission vehicle sales by 2040 at the latest.[179]

A growing number of Asian countries have developed strategies to enhance their climate adaptation and preparedness for natural disasters.

- Bangladesh's Mujib Climate Prosperity Plan seeks to ensure that at least 50% of the country's railway infrastructure is climate-resilient and energy efficient by 2030.[180]
- Sri Lanka's National Road Master Plan 2021-30 proposes developing a Disaster Planning System to document information on natural disasters such as flooding, landslides and river/sea erosion.[181]
- Türkiye's Climate Change Adaptation Strategy and Action Plan (CCASAP) for 2024-2030 identifies 11 priority sectors that are highly vulnerable to climate change, including transport.[182]

Countries have increasingly recognised that developing efficient public transport networks is central to promoting access for Asia's growing urban populations. Between 2015 and 2023, references to public transit measures tripled in the region's NDCs, and they increased more than 17 times in national transport policy documents.[183]

- To cut emissions, Azerbaijan's NDC of 2023 underscores the promotion of environmentally friendly modes of transport, improvements in intelligent transport management systems and the enhanced use of public transport; it also announces measures aimed at improving walking and cycling infrastructure to promote their wider use.[184]
- Oman's updated NDC of 2023 sets out to develop urban transport plans to reduce emissions and promote public transport; these plans are explicitly linked to efforts to reduce traffic congestion and improve air quality in urban areas.[185]
- Singapore's 2025 NDC reaffirms the country's commitment to "Walk-Cycle-Ride" (WCR) by encouraging wider uptake of walking, cycling, and public and shared transport; by 2040, the aim is for all journeys to the nearest neighbourhood centre using 15 WCR modes to take no more than 20 minutes, and for 90% of all peak-period WCR journeys to be completed in less than 45 minutes.[186] Singapore seeks to expand its rail network from 270 kilometres in 2025 to 360 kilometres by the early 2030s – putting 80% of households within a 10-minute walk from a train station – and to extend the cycling path network from more than 600 kilometres in 2025 to around 1,300 kilometres by 2030.[187]
- Uzbekistan's Voluntary National Review (VNR) of 2023 seeks to increase the share of public transport use in large, medium and small cities and envisages adapting public transport infrastructure for sedentary populations, including people with disabilities.[188]

Since 2021, several countries in the region have advanced road safety through multi-year action plans.

- Laos has committed to reduce road traffic fatalities and serious injuries by 70% by 2035, supported by helmet enforcement, speed regulations, improved infrastructure and seat belt laws.[189]
- Nepal, which had the third-highest rate of road traffic fatalities in the region in 2021, enacted its Road Safety Action Plan (2021–2030) that same year. The plan commits to reducing road traffic fatalities and injuries by 50% by 2030 and achieving Vision Zero by 2050, in alignment with SDG 3.6 on road traffic injuries.[190]
- The Philippines released the Philippine Road Safety Action Plan 2023–2028, targeting a 35% reduction in road traffic deaths by 2028.[191]

According to 2025 studies, national government spending on transport in Asia over a five-year period was only 1.5% of GDP on average, and countries with higher per capita GDPs allocated more resources to infrastructure maintenance.[192] **The Asian transport sector received 55% of global Official Development Assistance (ODA) from 2016 to 2023, up**

from 43% between 2011 and 2015.[193] However, public-private partnership (PPP) investments in Asia fell from 77% to 64% of the global total during 2016-2023, due largely to the COVID-19 pandemic.[194]

- ODA for rail transport grew substantially, from USD 2 billion (26% of total transport ODA) during 2002-2005, to USD 24 billion (51%) during 2016-2022.[195]
- ODA for roads grew in absolute terms from USD 5 billion to USD 17 billion during the same period, while its share of total transport ODA fell from 52% to 35%.[196]
- Road projects remained dominant in PPP investments, reflecting USD 121 billion (63% of total transport PPPs) between 2016 and 2022.[197]

In 2023, fossil fuel subsidies in Asia totalled USD 865 per capita, just above the global average of USD 813 per capita, although some countries have taken steps to phase out, reduce or reform these policies.[198] **Asian fossil fuel subsidies are projected to increase 32% between 2023 and 2030, further undermining climate and sustainability efforts.**[199] Although the transport sector's share of total fossil fuel subsidies in Asia fell from 22% in 2014 to 14% in 2022, the absolute value of transport-related subsidies rose sharply in 2022, in line with the spike in fossil fuel subsidies.[200] The region allocated a total of USD 97 billion to transport fuels in 2022, the highest annual level in a decade.[201]

- Indonesia enacted several policy measures in 2022 to address growing energy subsidies while reallocating resources more efficiently.[202]
- In 2024, Malaysia announced reforms to revamp its petrol subsidies by introducing targeted assistance; the measures, to be implemented from mid-2025 onwards, would mainly affect foreigners and high-income individuals and save around USD 1.9 billion annually.[203]

The momentum around electric vehicle adoption in the region has been coupled with a growing body of policy initiatives, financing mechanisms, and infrastructure programmes at the national and sub-national levels.[204]

- Azerbaijan's NDC of 2023 outlines a plan to equip all passenger buses operating in the administrative area of Baku city with compressed natural gas or electric motors starting in January 2025, and to exempt electric vehicle imports and sales, as well as their chargers, from value-added tax (VAT).[205]
- India introduced the FAME II scheme (Faster Adoption and Manufacturing of Hybrid and Electric Vehicles) in 2019, and since then it has incentivised 1.6 million electric vehicles, including two-, three- and four-wheelers. Since 2021, India has launched several additional schemes, such as a production-linked incentive programme to support domestic electric vehicle and battery manufacturing, along with programmes to scale up electric buses, trucks and charging infrastructure.[206]
- Indonesia aims to deploy 2.1 million electric vehicles and 13 million electric motorcycles by 2030, supported by Presidential Regulation No. 55/2019, which promotes domestic electric vehicle production, battery supply chains and nationwide charging infrastructure.[207] The government also offers tax incentives and has introduced a roadmap for electrification of public and private fleets.[208]
- Oman's NDC and LT-LEDS of 2023 reaffirm a vision to transition to electric light-duty vehicles and hydrogen fuel cells for long-distance trucks and buses, while supporting behavioural changes to reduce (individual) car use.[209]
- Oman's Sustainable Transport Master Plan aims to reduce the carbon intensity of the transport sector 20% and to electrify 34% of cars by 2030; as part of a goal to reduce 0.85 tonnes of CO_2 equivalent per capita per year, the plan includes initiatives to develop public transport systems, promote electric vehicles and create a dedicated bus lane on Sultan Qaboos Street.[210]
- Singapore's latest NDC reaffirms its commitment to phasing out pure internal combustion engine vehicles by 2040 and enabling the adoption of electric and other clean energy vehicles; since 2020, all new public bus purchases in the country have been cleaner energy models, including electric and diesel-hybrid buses.[211]
- Thailand's Thirteenth National Economic and Social Development Plan (2023-2027) sets out various goals for 2027, including converting at least 40,000 vehicles to modified electric vehicles; increasing the number of public charging stations (including fast chargers) by 5,000 while supporting grid reinforcement; and ensuring that an additional 5,000 automotive workers are upskilled for employment in the electric vehicle industry.[212] These goals support Thailand's "30@30" goal from 2022 of having 30% of the country's vehicle production be electric by 2030.[213]
- In 2024, the UAE set goals to increase the electric vehicle share to 50% of total car sales by 2050 and to reduce transport energy consumption 40% by 2050.[214]
- Dubai (UAE), through its Dubai Green Mobility Strategy 2030, aims to increase the number of electric and hybrid vehicles while making all public transport carbon-free by 2050.[215] Ras Al Khaimah launched solar-powered bus shelters using locally sourced materials as part of the RAKTA plan 2023-2030, and Ras Al Khaimah Insurance offers reduced rates for battery electric vehicles.[216] Sharjah has integrated an 83% share of hybrid and eco-friendly vehicles into its taxi fleet and aims for 100% by 2027.[217]
- Uzbekistan's VNR of 2023 sets a target to convert 80% (around 6,500 units) of public transport to gas-fuelled or electrically powered units by 2030; it exempts electric vehicle imports from excise taxes, customs duties, and

automobile fees, and aims to increase the electrification of railway infrastructure to 60% by 2026.[218]

- In 2024, Viet Nam announced a target for 30% of cars and 22% of motorbikes to be electric by 2030.[219] The government developed a National Programme for Transition to Electric Transport Vehicles outlining a strategic framework and mandating that all road vehicles use electricity or clean energy sources by 2050.[220]

Several countries in Asia are advancing vehicle efficiency and fuel economy regulations to curb emissions, improve air quality and reduce fuel consumption.

- Thailand has developed and implemented fuel economy policies through its Eco Sticker programme, requiring every new car to display information on fuel consumption and CO_2 emissions.[221]
- Thailand's Thirteenth National Economic and Social Development Plan (2023-2027) aims to reduce transport-induced air pollution ($PM_{2.5}$) and greenhouse gas emissions 4% annually by 2027.[222] In 2024, Thailand's House of Representatives approved several drafts of the Clean Air Act, which introduces comprehensive air quality controls (including on pollution from transport) and was expected to be enacted in April 2025.[223]
- Viet Nam has established a fuel economy baseline for passenger cars with under nine seats and is exploring regulatory pathways for setting efficiency standards.[224]

In parallel, a growing number of countries in the region have sought to increase the use of renewable energy as well as low-carbon fuels in transport.

- India has stood out in the promotion of alternative fuels to cut vehicle emissions: the Ministry of Road Transport and Highways has set emission standards for fuels, to ensure safety and support the use of cleaner fuels while exploring how combining different transport modes could help lower fuel costs.[225]
- To further India's integration of renewables in transport, the government advanced its target of 20% ethanol blending in petrol from 2030 to 2025.[226]
- Indonesia has strong biofuel blending mandates in place, with a 35% blend in 2023 and plans to increase the share to 40% in 2025 and 50% in 2029.[227]
- Thailand's Thirteenth National Economic and Social Development Plan (2023-2027) aims to increase the share of renewables in final energy consumption at least 24% by 2027.[228]

Although the aviation industry is an important driver of economic development and employment in Asia, its sustainability hinges on decarbonisation measures.[229] Several countries in the region have launched sustainable aviation fuel initiatives, including mandates, incentives and blending targets. Thailand plans to replace 1% of conventional jet fuel with sustainable aviation fuel in 2026, while China, Japan and Singapore are scaling up sustainable aviation fuel production and supply chain investment.[230]

For maritime transport, a growing number of Asian countries have embraced green shipping corridors and engaged in other emission reduction measures. In 2024, Singapore and Australia signed a Memorandum of Understanding (MoU) formalising their co-operation on a Green and Digital Shipping Corridor, which would pilot solutions to enhance the resilience, efficiency and sustainability of global supply chains and logistics between the countries.[231]

Inland waterway transport had gained attention in countries with extensive river networks and coastlines. In China, inland shipping is being modernised and decarbonised through shore power and vessel electrification policies, and Viet Nam has included waterway transport improvements in its national climate and transport strategies.[232]

Although freight transport remains less prominent than passenger transport in many Asian NDCs, its profile has grown within national transport strategies. Several countries have introduced new measures to support a modal shift to rail and to electrify freight fleets.

- In 2024, China released the Action Plan for Reducing Costs and Improving Quality and Efficiency in Transportation and Logistics. Key targets for 2027 include reducing the cost of social logistics to around 13.5% of GDP, increasing rail freight tonne-kilometres by around 10%, growing rail-waterway intermodal container transport at ports by an average of 15% annually, and ensuring that over 80% of port cargo is transported via rail, waterways, enclosed belt conveyors and new energy vehicles.[233]
- To expand its rail freight sector, the Philippines' Development Plan 2023-2028 aims to connect cargo and freight rail infrastructure to strategic infrastructure such as ports.[234]
- In its Action Plan Logistics Development 2023-2027, Thailand sets a target for rail to carry 7% of the country's total freight volume on average during the period 2023-2025.[235]
- In 2024, Viet Nam laid out new national plans to electrify its transport sector, including targets for freight vehicles: electric trucks are expected to account for 15% of sales by 2030, 20% by 2040 and 25% by 2050. This represents the slowest growth among all road vehicle segments.[236]

Partnerships in action

SLOCAT partners engaged in dozens of actions during 2023-2024, including:

- The **Asian Transport Observatory (ATO)**, developed with the support by the Asian Development Bank and the Asian Infrastructure Investment Bank, provides a platform to strengthen the knowledge base on transport in the Asia-Pacific region. The ATO supports comprehensive yet focused data towards enabling better informed investments, and policy decisions in the transport sector.[237]
- As of 2024, several Asian actors – including India, Thailand and non-governmental stakeholders in Azerbaijan – have endorsed the **Global MoU committing to 100% zero-emission truck and bus sales by 2040**.[238] Facilitated by the Drive to Zero initiative, the MoU promotes collaboration on policy harmonisation, technology deployment, and freight sector decarbonisation, offering a platform for both governments and cities to accelerate zero-emission freight adoption.[239]
- The **Leadership Group for Clean Transport in Asia** supports knowledge exchange and peer learning on sustainable urban mobility, and since 2022 has addressed themes including infrastructure for walking and cycling, electrification of public transport and climate-smart urban freight. The Group is convened by the Asia LEDS Partnership / ICLEI South Asia in collaboration with national and local governments, including Bangladesh, Bhutan, India, Indonesia, Lao PDR, Mongolia, Nepal, the Philippines, Sri Lanka and Thailand. In 2023, at the 16th Regional Environmentally Sustainable Transport (EST) Forum in Asia, the Group launched a communiqué underscoring six priority areas: intermodal, low-carbon freight transport systems; increasing the share of electric two-and three-wheelers, cars, trucks and buses; electric vehicle charging infrastructure and safe and resilient grid integration; robust fuel efficiency and emission standards; renewable energy; and zero emission energy sources for all transport modes.[240]
- **MobiliseYourCity** has supported the development of Sustainable Urban Mobility Plans (SUMPs) in Asian countries including India, Cambodia and Nepal.[241] Through technical co-operation, capacity building, and financing facilitation, the initiative helps cities mainstream climate, accessibility and inclusion in mobility planning.[242] Since 2022, projects in Kochi (India) and Battambang (Cambodia) have helped align local transport strategies with national climate targets.[243]
- The **NDC Transport Initiative for Asia**, launched in 2020 and active across China, India, Viet Nam, and regional platforms, supports the integration of transport decarbonisation into NDC implementation and long-term strategies.[244] The initiative engages national ministries, research institutions, and city governments in developing climate-aligned roadmaps; monitoring, reporting, and verification (MRV) systems; and finance strategies.[245]
- The Regional Action Programme for Sustainable Transport, implemented by the **United Nations Economic and Social Commission for Asia and the Pacific,** is focused on decarbonisation, digitalisation and resilience.[246] Through policy dialogues, capacity building, and support to member states, the initiative aims to align transport systems with the Sustainable Development Goals and the Paris Agreement. Recent work includes regional forums on freight efficiency, low-carbon fuels and the integration of transport in climate adaptation plans.[247]

MODULE 3 | 3.3

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Europe Regional Overview

DEMOGRAPHICS, TRANSPORT AND SUSTAINABILITY DATA

Indicators	Europe	Global
Population size (2023)	745 million	8,000 million
Population growth (2015-2023)	0.3%	8.5%
Urban population share (2023)	75.3%	57%
Urban population growth (2015-2023)	2.7%	16%
GDP per capita (2023)	USD 28,945 (constant 2015 USD)	USD 11,337 (constant 2015 USD)
GDP growth (2015-2023)	12.5%	22.8%
Share of women employed in transport and storage (2023)	24.9%	15.6%
Motorisation rate (2022)	588.5 vehicles per 1,000 people	218.7 vehicles per 1,000 people
Share of urban population with convenient access to public transport (2020)	88%	52%
Share of rural population with access to all-weather primary and secondary roads (2020)	No data*	38%
Transport total GHG emissions (2023)	1,238 million tonnes CO_2eq	7,123 million tonnes CO_2eq
Per capita transport GHG emissions (2023)	1.66 tonnes CO_2eq	0.89 tonnes CO_2eq
Fossil fuel subsidies (explicit and implicit) (2023)	USD 1,265 per capita (constant 2021 USD)	USD 813 per capita (constant 2021 USD)
Share of renewable energy sources in transport (2023)	10.1%	4.6%
Carbon intensity of electricity generation (2023)	283.9 gCO_2/kWh	417 gCO_2/kWh
Transport contribution to air pollution (2019)	9%	6%
Premature deaths attributable to air pollution by transport (2019)	4.1 per 100,000 people	2.3 per 100,000 people
Road casualties (2021)	5.8 per 100,000 people	15 per 100,000 people

Source: See endnote 1 for this section.

* The underlying data for rural access is based on the Rural Access Index, which does not cover high-income countries. As a result, no region-wide value is available for Europe.

KEY FINDINGS

Demand, use and access

- Transport is a key pillar of the European economy, employing roughly 30 million people (in transport and storage) in 2023 while providing essential goods and services and fostering socio-economic development. Overall, transport contributed around 5% to the European Union's (EU) GDP in 2022.
- Women continue to be underrepresented in most transport-related industries in Europe. The share of women employed in the European transport and storage sector has fallen from 25.7% in 2015 to 24.9% in 2023, placing the region second after North America.
- Europe had the world's highest share of convenient access to public transport for its urban populations, at 88% in 2020, reflecting generally well-developed public transport networks. Public transport ridership in Europe tends to be high compared to other world regions.
- In 2023, Europe was home to the top six countries worldwide with the highest shares of people living within 300 metres of a physically protected bike lane.
- Across Europe, most rural populations had near-universal access to all-season road infrastructure as of 2019 (including 98.5% of Albania's rural population and 99.9% of Romania's).
- Transport consistently ranked as the third largest category of household expenditure across European countries (after housing and food and non-alcoholic beverages) in 2023, accounting for between 11.5% and 13.5% of spending since 2000.
- Freight transport activity in Europe has continued to surge since 1995. Road freight transport dominates in the EU-27, representing 53.8% of total freight transport activity in 2022, followed by intra-EU maritime transport at 28%. The share of rail in EU freight transport activity has decreased relative to 1995 but is expected to grow in the coming decade.
- Passenger transport activity in Europe grew consistently between 2012 and 2019, with the EU recording more than 6,000 billion passenger-kilometres in 2019; it then fell sharply in 2020 and 2021 due to the COVID-19 pandemic.
- In the EU-27, total passenger transport activity by motorised transport (all types) reached an estimated 5,617 billion passenger-kilometres in 2022, or an average of 12,545 kilometres per person.
- Passenger transport activity and the shares of various modes in Europe stayed relatively constant from 2015 to 2022, with passenger cars continuing to accounting for the bulk (73%) of activity (measured in passenger-kilometres) in 2022. Buses and coaches represented 7.2%, railways 7.2%, tram and metro 1.2%, and motorised two-wheelers 2%.
- The appetite for long-distance rail travel in Europe, including night trains, has grown in the aftermath of COVID-19. Companies have responded with new service offerings.
- Cycling has received growing attention at the regional, national and local levels since 2019, a trend that was further amplified during COVID-19.
- While walking is a cornerstone of sustainable transport, its prevalence in Europe varies depending on the urban design, cultural norms and policy support. A 2024 study found that Europe had the second highest share of people walking (21.8%) among regions globally, after Africa (35.8%).
- In 2024, the motorisation rate (covering four-wheeled motor vehicles) in Europe was 588.5 vehicles per 1,000 people, well above the world average of 218.6 vehicles per 1,000 people. This was up from a European average of 554 vehicles per 1,000 people during 2016-2020.

KEY FINDINGS

- Government investment in transport infrastructure as a share of GDP in the EU was an estimated 3.2% in 2022, in line with the average over the period 2003-2022.
- Due to a decline in investments, the European railway network shrunk 1.3% between 2013 and 2023; however, rail networks grew 8.9% in Lithuania and 5.2% in Spain. Overall, the European high-speed rail network grew 47.2% during the decade.
- European sales of battery electric vehicles increased by double digits annually from 2017 to 2023, then stalled in 2024 at 2.2 million units (the same as in 2023). The region's total fleet of battery electric cars exceeded 8.7 million units in 2024, making up 4.7% of the overall car fleet. Electric vehicles accounted for 22% of new vehicle sales in both 2023 and 2024.
- Zero-emission buses and trucks have gained traction in Europe, with more than 21,600 zero-emission heavy-duty vehicles sold in 2024, up from 19,300 in 2023. Electric buses represented 2.2% of the region's bus fleet in 2024, while electric trucks made up only 0.42% of all trucks. In the fourth quarter of 2024, zero-emission city buses exceeded 50% of the new sales share in Europe, marking the first time their sales share surpassed that of internal combustion engine buses.
- Critical to the discourse on vehicle electrification, the carbon intensity of electricity generation in Europe was an estimated 287.5 grams of CO_2 equivalent per kilowatt-hour in 2024, showing a progressive 26% reduction since 2015.

Sustainability and climate trends

- Transport is one of the largest sources of greenhouse gas emissions in Europe, contributing 1,238 million tonnes of CO_2 equivalent in 2023 and accounting for 18% of the region's total emissions.
- The European transport sector (excluding international aviation and shipping) was responsible for 17.4% of global transport greenhouse gas emissions in 2023.
- Per capita transport greenhouse gas emissions in Europe, at 1.66 tonnes of CO_2 equivalent, were well above the global average in 2023, consistent with the region's high motorisation rates.
- European transport remains highly dependent on oil, although the average share of renewable energy used for road and rail transport in the EU increased from below 2% in 2005 to 10.1% in 2023.
- Oil-derived fuels accounted for 92.7% of the region's energy consumption in transport in 2022 (including international navigation and aviation).
- Despite intensified decarbonisation efforts, European transport emissions have not fallen significantly since 2005.
- Given their dominance in the region, passenger cars contributed nearly three-quarters (73.2%) of Europe's transport greenhouse gas emissions in 2022 (including domestic transport and international bunkers).
- Congestion in and around European cities cost an estimated USD 113.4 billion (EUR 110 billion) per year, or 1% of EU GDP (2012 research).
- Railways, which have the lowest emissions per kilometre and unit transported, contributed 0.3% of EU transport greenhouse gas emissions in 2022.
- Rail is the only EU transport sector in which greenhouse gas emissions have consistently fallen since 1990 (reduced by 70%), a trend largely attributable to the electrification of rail lines and to the declining carbon intensity of the EU electricity mix.
- In 2022, aviation contributed around 3.8% to 4% of the EU's total greenhouse gas emissions and 13.9% of the region's transport emissions (the second largest source after road transport); it has experienced the fastest emission growth among transport modes in recent decades.
- Maritime transport accounts for 3-4% of the EU's total CO_2 equivalent emissions. The maritime sector contributed more than a quarter (26%) of all methane emissions from the EU transport sector in 2022.
- Overall, the share of European greenhouse gas transport emissions from aviation and international maritime transport is projected to increase from around 26% in 2022 to more than 47% in 2050.

KEY FINDINGS

- In addition to being a leading contributor to climate change, Europe's transport sector is particularly vulnerable to its consequences. Transport costs associated with climate change-induced hazards are projected to increase sharply by the 2080s, potentially exceeding USD 10.35 billion (EUR 10 billion) annually, up 20-fold from 2024.
- Transport has been a major contributor to health-damaging air pollution, accounting for 9% of Europe's air pollutant emissions in 2019 and an estimated 569,000 deaths annually in the region.
- In 2022, more than 100 million Europeans were exposed to noise pollution from transport, primarily from road traffic, despite policies and regulations targeting motor vehicle sound levels and aircraft noise management.
- As of 2024, more than 20% of the region's population lived in areas where road traffic noise levels exceed EU regulations and can cause significant harm to health and well-being; this share rises above 30% if the stricter thresholds of the World Health Organization (WHO) are applied.
- Although Europe experienced the fewest road traffic fatalities globally in 2021, road crashes are the leading cause of death for individuals aged 5-29 years, resulting in one person dying every seven minutes and more than 62,000 people being killed on the region's roads every year. Despite a 3% decrease in road fatalities in 2024, most EU countries are not on track to meet the region's goal of halving road deaths by 2030.

Policy and investment developments

- Tackling transport emissions has been a key focus in Europe, and the European Green Deal, launched in 2021, is a key driver of EU efforts to become climate-neutral by 2050.
- The EU Clean Industrial Deal of 2025 outlines actions to turn decarbonisation into a driver for growth in key European industries, such as transport through a Sustainable Transport Investment Plan, a Hydrogen Mechanism and the implementation of the EU Critical Raw Materials Act. Contrary to expectations, the Deal does not include a 90% emission reduction target for 2040, which some argue risks creating regulatory and investment uncertainty in the transport sector.
- As of 25 May 2025, only five European countries – Andorra, Moldova, Montenegro, Switzerland and the United Kingdom – had submitted their third-generation Nationally Determined Contributions (NDCs) to the United Nations Framework Convention on Climate Change.
- The EU's second-generation NDC of 2023 reflects essential elements under the "Fit for 55" Package and aims to cut the region's greenhouse gas emissions 55% below 1990 levels by 2030.
- As of 25 May 2025, 29 European countries as well as the EU had submitted LT-LEDS (Long-Term Low Emission Development Strategies) to the UNFCCC.
- Four countries from Eastern Europe – Albania, Bosnia and Herzegovina, Moldova and Serbia – had submitted National Adaptation Plans (NAPs) to the UNFCCC as of 25 May 2025.
- The shift from fossil fuels to low-carbon fuels and electrification has been a major focus of EU legislative efforts. As part of its "Fit for 55" Package", in 2023 the EU adopted the revised Regulation 2019/631, which in practical terms would translate into the phase-out of new sales of ICE vehicles from 2035.
- Across Europe, fossil fuel subsidies have contributed to growing fossil fuel use and related greenhouse gas emissions. In 2023, fossil fuel subsidies in the region totalled USD 1,265 per capita, the second highest level after North America (USD 2,172 per capita) and well above the global average (USD 813 per capita).
- In 2024, the revised EU Regulation 2019/1242 set CO_2 emission standards for heavy-duty vehicles, calling for a near-complete phase-out of diesel-powered models by 2040.
- The EU's vehicle efficiency standards (expressed as CO_2 emission standards) for cars, vans and heavy-duty vehicles have narrowed the emissions gap needed to align road transport with the goals of the Paris Agreement, by 66% for heavy-duty vehicles and 75% for light-duty vehicles.

KEY FINDINGS

- In March 2025, the European Commission launched an Action Plan to respond to the rapid technological advancements and fierce global competition in the region's automotive sector; critics worry that the plan will derail EU transport emission efforts, as it proposes extending the timeline for automakers to comply with the 2025 emission reduction targets for cars and vans, up until 2027.
- Ongoing challenges related to international trade tariffs have triggered similar policy reactions at the national level.
- As of 2022, the EU had an average of 10 electric vehicles per charging station, and just three countries (Germany, France and the Netherlands) accounted for more than two-thirds of all EU charging points. Meanwhile, 10 countries did not have a single charger per 100 kilometres of road, presenting a challenge for electric cross-border travel in Europe.
- The EU's Sustainable and Smart Mobility Strategy prioritises infrastructure development for zero- and low-emission vehicles and sets a regional target for 1 million public charging points by 2025.
- The EU has achieved its target for 10% of all energy used in road and rail transport to originate from renewable sources by 2020, as set in Renewable Energy Directive 2009/28/EC.
- The revised Renewable Energy Directive EU/2023/2413 of 2023, part of the "Fit for 55" Package, set a new binding EU target for at least 42.5% renewable energy by 2030 (but aiming for 45%), through the use of renewable fuels, including hydrogen, in sectors where electrification is not yet a feasible option (such as shipping and aviation).
- In aviation and maritime transport, Europe has embraced measures including demand reduction and a shift to more sustainable modes. The ReFuelEU Aviation and FuelEU Maritime regulations, adopted in 2023, aim to support the uptake of renewable and low-carbon fuels in these sectors.
- The latest revisions of the EU Emission Trading System (ETS) will impact the aviation and maritime sectors, while a new, separate ETS2 aims to reduce emissions from road transport.
- Beyond decarbonisation, the EU has pursued policy efforts to tackle air pollution from the transport sector.
- As of 2024, the EU's revised Trans-European Transport Network (TEN-T) policy mandates urban nodes to adopt a Sustainable Urban Mobility Plan (SUMP) and to collect and regularly submit data on urban mobility indicators.
- Many European countries have adopted SUMPs and Urban Vehicle Access Regulations (UVARs) to advance a balance of transport modes while encouraging a shift towards higher-quality and sustainable transport. In Europe, 73% of UVARs were low- and zero-emission zones as of 2022.
- Closer integration between urban mobility and land use planning has gained traction in the region.
- As of 2025, 13 European countries had national cycling strategies in place. The EU's European Declaration on Cycling in 2024 marked an important turning point, elevating cycling to a strategic policy priority and recognising it as "the most sustainable, accessible and inclusive, low-cost and healthy form of transport and recreation".
- In 2023, 69% of European countries had national walking policies or similar measures, although only 6 countries had specific national walking policies. The first-ever Pan-European Master Plan on Walking, launched in 2024, has spurred efforts to work with national governments to develop and implement walking policies.

Context, challenges and opportunities

Transport is a key pillar of the European economy and contributes significantly to the region's gross domestic product. Europe's have the greatest access to public transport globally as well as near-universal access to all-weather road infrastructure for rural residents.

Yet transport remains the only major sector of the European economy where greenhouse gas emissions have stayed well above 1990 levels and have only recently started to dip.[2] Europe's transport sector accounted for 17.4% of global transport greenhouse gas emissions (excluding international aviation and shipping) in 2023.[3] Consistent with its high motorisation rates, Europe has relatively high per capita transport greenhouse gas emissions, at 1.66 tonnes of carbon dioxide (CO_2) equivalent in 2023.[4]

Despite extensive legislation to reduce the climate and environmental footprint of European transport, the sector could account for nearly half of total EU emissions by 2030, based on current policies under the European Green Deal aimed at making the EU climate-neutral by 2050.[5] Getting on track to climate neutrality will require the EU to reduce its transport emissions 90% by 2050 relative to 1990 levels.[6]

In addition to being a prime contributor to climate change, Europe's transport sector is particularly vulnerable to its consequences. The costs related to transport infrastructure losses from climate change-induced hazards are projected to reach up to USD 10.3 billion (EUR 10 billion) by the 2080s, up 20-fold from the 2024 level.[7]

Beyond its climate impacts, transport contributed around 9% of Europe's air pollution emissions, resulting in around 4.1 premature deaths per 100,000 people in 2019.[8] Advances in road transport have enabled large declines in air pollutant emissions, but this progress has not been spread evenly across pollutants and transport modes, with air pollutants from aviation and shipping still increasing.[9] Progress in reducing transport noise has lagged despite policies and regulations targeting motor vehicle sound levels and aircraft noise management.[10] Although Europe is considered the safest region globally for road transport, road crashes remained a leading cause of death for children and young adults, claiming more than 62,000 lives in 2021; most EU countries are not on track to meet the goal of halving road deaths by 2030.[11]

The share of women employed in transport and storage was only around 24.9% in 2023 and has remained relatively constant over the past 10 years.[12] Addressing transport affordability is also a concern, with transport consistently ranking as the third largest category of household expenditure in Europe (accounting for between 11.5% and 13.5% of spending since 2000).[13] This reflects structural characteristics of European transport systems, including a high reliance on private car ownership, as well as rising fuel prices and inflation.

Transport is broadly recognised as a critical enabler of the European Green Deal, the Paris Agreement on climate change and the 2030 Agenda for Sustainable Development. Achieving the ambitions set by these policy frameworks will require co-ordinated policy efforts at the EU, national and local levels to accelerate the uptake of sustainable transport solutions, contain inefficient transport demand and shift activity to more sustainable modes.

However, the implementation of such measures is facing mounting challenges. Tight public budgets, high debt levels and shifting political priorities have constrained action across Europe. Recent trade tensions, particularly among the EU, China, and the United States, alongside concerns from European automakers about job losses and competitiveness, have prompted a rethinking of electric vehicle policies and a weakening of legislation to phase out internal combustion engine (ICE) vehicles, with a view to prioritise local production and protect domestic industries. This operating context has inspired initiatives such as the EU's Clean Industrial Deal and the Industrial Action Plan for the European Automotive Sector, which aim to align decarbonisation objectives with industrial growth while securing critical battery supply chains for a homegrown electric vehicle industry.[14]

Ongoing geopolitical conflicts, notably in Ukraine and the Middle East, as well as the lingering impacts of the COVID-19 pandemic have underscored the urgency of strengthening Europe's energy independence. Transport remains one of the region's most fossil fuel-dependent sectors, with much of the energy imported. This has spurred European efforts to expand renewable energy use, electrify transport and reduce overall demand. As of 2023, renewables accounted for 10.1% of the energy used in EU road and rail transport (up from less than 2% in 2005), and battery electric vehicles represented 22% of new vehicle registrations in 2024, with large variations across European countries.[15]

Europe remains heavily reliant on imports for critical electric vehicle battery materials, such as lithium (where the region has 100% dependence), nickel (75%) and aluminium (58%).[16] The need to ensure a secure and sustainable supply of critical raw materials has inspired EU initiatives such as the Critical Raw Materials Act of 2023, aimed at lowering industry dependence on single-country suppliers.[17]

Meanwhile, tensions persist between boosting aviation connectivity and curbing emissions, as illustrated by debates over airport expansions and domestic flight bans. At the

national and local levels, discussions have gained traction around free public transport and urban vehicle access regulations (UVARs), reflecting a growing momentum to make mobility more accessible, inclusive and sustainable.[18]

Not least, weakened global climate and sustainability multilateralism, as exemplified by the US withdrawal from the Paris Agreement, has intensified pressure on the EU to double down on its role as a global climate leader. This, however, has been challenged by a wave of political changes across the continent and by broader global economic instability.[19] The significant delay in the EU's submission of its third-generation Nationally Determined Contribution (NDC) towards reducing emissions under the Paris Agreement has been attributed to European elections and to EU plans to first approve a new climate target for 2040.[20]

Demand, use and access

Transport is a key pillar of the European economy, employing roughly 30 million people (in transport and storage) in 2023 while providing essential goods and services and fostering socio-economic development.[21] Overall, transport contributed around 5% to the EU's GDP in 2022.[22]

Women continue to be underrepresented in most transport-related industries in Europe. The share of women employed in the European transport and storage sector has fallen from 25.7% in 2015 to 24.9% in 2023, placing the region second after North America.[23]

Europe had the world's highest share of convenient access to public transport for its urban populations, at 88% in 2020, reflecting generally well-developed public transport networks.[24] Public transport ridership in Europe tends to be high compared to other world regions.

- Estonia, with its nationwide free public transport policy, ranked first in Europe with 98.3% of its urban population enjoying convenient access to public transport, followed by Liechtenstein (96.8%), Spain (95.8%) and Austria (95.7%).[25]
- In 2022, Budapest (Hungary) was by far the city with the highest public transport ridership per capita worldwide, at around 727 trips; Prague (Czech Republic) took second place globally at 687 trips, followed by Warsaw (Poland) at 452 trips.[26]

In 2023, Europe was home to the top six countries worldwide with the highest shares of people living within 300 metres of a physically protected bike lane.[27] Proximity

to safe cycling infrastructure is a key factor in encouraging people to use cycling as their preferred mode of transport. The top six countries globally were Finland (83% of the population near a bike lane), Denmark (82%), Sweden (74%), the Netherlands (69%), Germany (53%) and Norway (53%).[28] By comparison, only 5% of the world's population on average lived near protected bikeways in 2023.[29]

Across Europe, most rural populations had near-universal access to all-season road infrastructure as of 2019 (including 98.5% of Albania's rural population and 99.9% of Romania's).[30] This reflects in part EU and national funding to boost regional development and close connectivity gaps. (Note that Rural Access Index data for high-income countries are less comprehensive than for lower-income countries.)

Transport consistently ranked as the third largest category of household expenditure across European countries (after housing and food and non-alcoholic beverages) in 2023, accounting for between 11.5% and 13.5% of spending since 2000.[31] Since 2015, consumer prices for personal transport as well as transport services have continued to outpace overall inflation.[32] This reflects the essential role of transport in daily lives as well as structural characteristics of the European transport sector, such as the dominant role of private car ownership and rising fuel prices.

Freight transport activity in Europe has continued to surge since 1995.[33] **Road freight transport dominates in the EU-27, representing 53.8% of total freight transport activity in 2022, followed by intra-EU maritime transport at 28%.**[34] Overall, European freight transport suffered much less than passenger traffic during the COVID-19 pandemic and recovered fully by 2021.[35]

The share of rail in EU freight transport activity has decreased relative to 1995 but is expected to grow in the coming decade.[36] EU legislation is aimed at promoting a modal shift from roads to railways and inland waterways to boost energy efficiency and reduce emissions of greenhouse gases and air pollutants.[37]

- Railways accounted for 11.9% of EU freight transport, inland waterways for 3.5% and intra-EU air transport for only 0.1% in 2022.[38]
- The EU's Sustainable and Smart Mobility Strategy aims to raise rail freight's share to 30% by 2030.[39]

Passenger transport activity in Europe grew consistently between 2012 and 2019, with the EU recording more than 6,000 billion passenger-kilometres in 2019; it then fell sharply in 2020 and 2021 due to the COVID-19 pandemic.[40] **In the EU-27, total passenger transport activity by motorised transport (all types) reached an estimated 5,617 billion passenger-kilometres in 2022, or an average of 12,545 kilometres per person.**[41] The European Commission projects that passenger transport activity across all modes will increase 15.5% between 2015 and 2030, to reach 6,487 billion passenger-kilometres.[42]

Passenger transport activity and the shares of various modes in Europe stayed relatively constant from 2015 to 2022, with passenger cars continuing to accounting for the bulk (73%) of activity (measured in passenger-kilometres) in 2022.[43] **Buses and coaches represented 7.2%, railways 7.2%, tram and metro 1.2%, and motorised two-wheelers 2%.**[44] Intra-EU air transport constituted 9.1% (up 1.2% from 2015 to 2022), and intra-EU maritime transport represented 0.3% (down 8%).[45]

The appetite for long-distance rail travel in Europe, including night trains, has grown in the aftermath of COVID-19. Companies have responded with new service offerings.

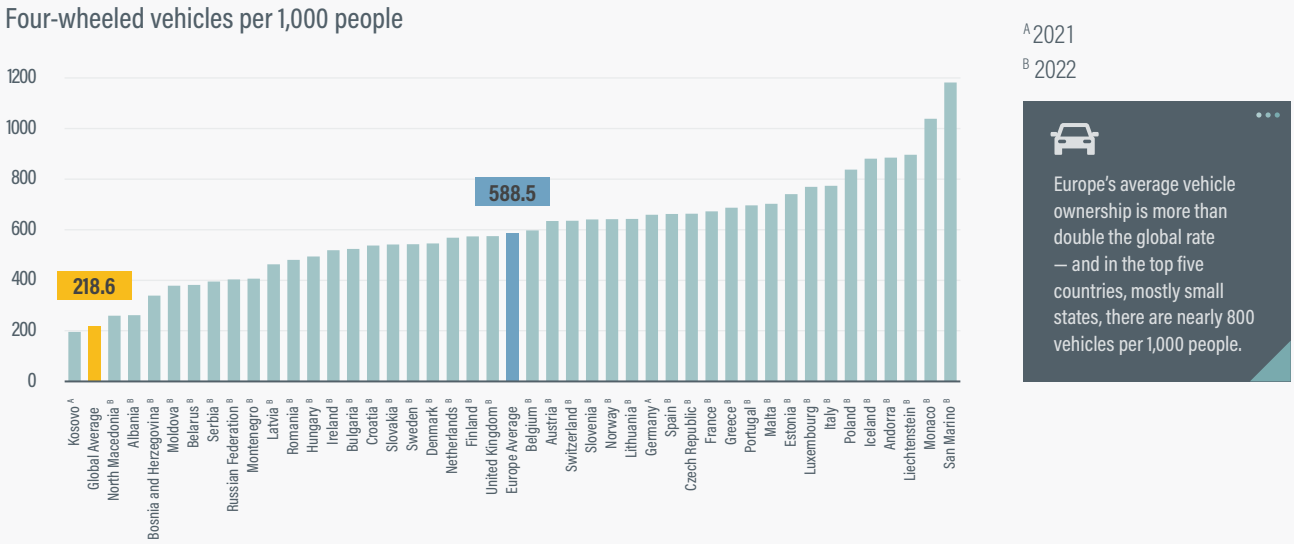
- Since September 2024, Austria's national railway company ÖBB has operated "NightJet" night train services between Munich and Bologna, Salzburg and Florence, and Vienna and Rome.[46]
- A daytime high-speed train has linked Paris and Berlin since December 2024.[47]
- Germany's Deutsche Bahn and French railway company SNCF plan to launch a direct, high-speed rail route from Munich to Paris at the end of 2026 with five daily direct connections.[48]

Cycling has received growing attention at the regional, national and local levels since 2019, a trend that was further amplified during COVID-19. However, the data show different realities across zones.

- In Paris (France), 84 kilometres of cycling lanes have been added since 2020, and bike use grew 71% between the end of the pandemic lockdowns and 2023.[49] As of 2024, more people were cycling in inner Paris than using cars, with only 4.3% of trips made by driving, 11.2% by bicycle, 30% by public transport and 53% by walking.[50]
- According to EuroVelo, a network of 17 long-distance cycle routes that cross and connect Europe, cycle traffic increased 1.4% in rural areas and 1.3% in urban areas in 2024, but fell 0.7% in peri-urban areas.[51]
- Cycle traffic on three EuroVelo routes – #14 "Waters of Central Europe", #11 "East Europe Route" and #1 "Atlantic Coast Route" – increased in 2024, with the latter recording 6% growth that year.[52]

While walking is a cornerstone of sustainable transport, its prevalence in Europe varies depending on the urban

FIGURE 1. Motorisation rates per 1,000 people in Europe, various years



Source: See endnote 57 for this section.

design, cultural norms and policy support.[53] **A 2024 study found that Europe had the second highest share of people walking (21.8%) among regions globally, after Africa (35.8%).**[54]

- A study of 10 European countries found that the share of daily trips made by walking ranged from 9% in Ireland to 26% in the United Kingdom.[55]
- A 2024 study showed significant variation in modal shares across European cities, with the share of walking and cycling ranging from 12% in Málaga (Spain) to 75% in Utrecht (Netherlands).[56]

In 2024, the motorisation rate (covering four-wheeled motor vehicles) in Europe was 588.5 vehicles per 1,000 people, well above the world average of 218.6 vehicles per 1,000 people (Figure 1)**.**[57] **This was up from a European average of 554 vehicles per 1,000 people during 2016-2020.**[58] Motorisation rates vary widely across the continent, from a high of 1,182.9 vehicles per 1,000 people in the microstate of San Marino in 2022, to a low of 195.3 vehicles per 1,000 people in Kosovo in 2021 (below the global average).[59]

Government investment in transport infrastructure as a share of GDP in the EU was an estimated 3.2% in 2022, in line with the average over the period 2003-2022.[60] Investment in transport infrastructure is a critical element to assess connectivity and the sustainable functioning of economies. In 2022, the region's highest total expenditures in road transport construction were in Poland (USD 8,250 million, down from USD 8,970 in 2020) and the Netherlands (USD 7,854 million, down from USD 8,130 million in 2020).[61]

Due to a decline in investments, the European railway network shrunk 1.3% between 2013 and 2023; however, rail networks grew 8.9% in Lithuania and 5.2% in Spain.[62] **Overall, the European high-speed rail network grew 47.2% during the decade.**[63] In Spain, the network of high-speed lines increased 66% from 1,919 kilometres in 2013 to 3,190 kilometres in 2023, the highest such growth in Europe.[64] France, the continent's pioneer of high-speed rail, ranked second with 35% growth in its high-speed network (to 2,748 kilometres in 2023), followed by Germany with a 32% increase (to 1,163 kilometres).[65]

European sales of battery electric vehicles increased by double digits annually from 2017 to 2023, then stalled in 2024 at 2.2 million units (the same as in 2023).[66] **The region's total fleet of battery electric cars exceeded 8.7 million units in 2024, making up 4.7% of the overall car fleet.**[67] **Electric vehicles accounted for 22% of new vehicle sales in both 2023 and 2024.**[68] In addition, 110,000 battery electric vans were sold in 2024, representing 5.3% of all new vans registered in the region (down slightly from 130,000 units sold and a 6.3% share in 2023).[69] The European countries with the highest market shares of battery electric and plug-in hybrid passenger cars in 2024 were Norway (92%), Sweden (58%) and Denmark (55%).[70]

Zero-emission buses and trucks have gained traction in Europe, with more than 21,600 zero-emission heavy-duty vehicles sold in 2024, up from 19,300 in 2023.[71] **Electric buses represented 2.2% of the region's bus fleet in 2024, while electric trucks made up only 0.42% of all trucks.**[72] **In the fourth quarter of 2024, zero-emission city buses exceeded 50% of the new sales share in Europe, marking the first time their sales share surpassed that of ICE buses.**[73]

- In seven European countries – Bulgaria, Ireland, Latvia, Lithuania, Luxembourg, the Netherlands and Romania – only zero-emission city bus models were sold in 2024.[74]
- Germany has fuelled growth in zero-emission trucks, with 1,200 heavy-duty trucks (1.7% sales share) and 2,692 light- and medium trucks (16% sales share) sold in 2024.[75]

Critical to the discourse on vehicle electrification, the carbon intensity of electricity generation in Europe was an estimated 287.5 grams of CO_2 equivalent per kilowatt-hour (kWh) in 2024, showing a progressive 26% reduction since 2015.[76] Europe's carbon intensity of electricity was well below that in Asia (514.3 grams of CO_2 equivalent per kilowatt-hour), Africa (501.2 grams) and Oceania (335.9 grams) but above that in North America (279.2 grams) and Latin America and the Caribbean (272.3 grams).[77]

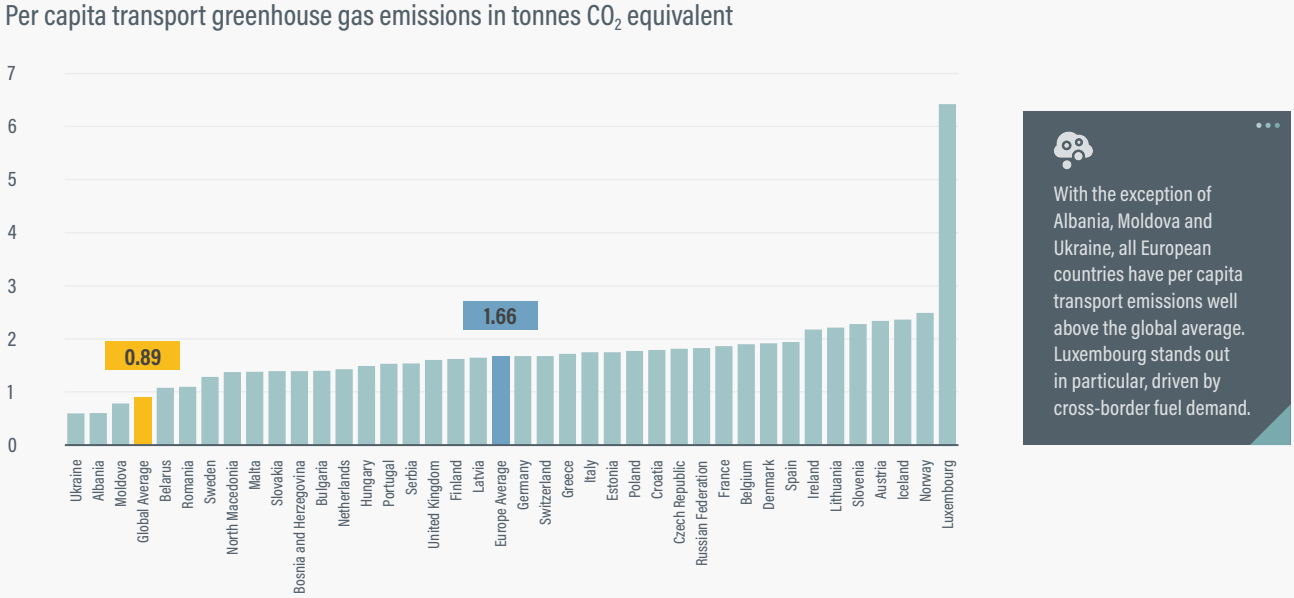
Sustainability and climate trends

Transport is one of the largest sources of greenhouse gas emissions in Europe, contributing 1,238 million tonnes of CO_2 equivalent in 2023 and accounting for 18% of the region's total emissions.[78] **The European transport sector (excluding international aviation and shipping) was responsible for 17.4% of global transport greenhouse gas emissions in 2023.**[79] Transport emissions in Europe have plateaued at around 1.2 gigatonnes since 2009, although they fell slightly by 0.7% in 2023.[80]

Per capita transport greenhouse gas emissions in Europe, at 1.66 tonnes of CO_2 equivalent, were well above the global average in 2023 (Figure 2), consistent with the region's high motorisation rates.[81] European per capita transport emissions were the third highest globally after North America (4.99 tonnes) and Oceania (2.68 tonnes).[82] By country, the region's highest per capita transport emissions were in Luxembourg (6.4 tonnes) and Norway (2.5 tonnes), and the lowest were in Ukraine and Albania (both roughly 0.6 tonnes).[83] Per capita emissions in Luxembourg are influenced by strong cross-border fuel demand, with foreign vehicles representing 71% of energy consumption in the transport sector in 2022.[84]

European transport remains highly dependent on oil,

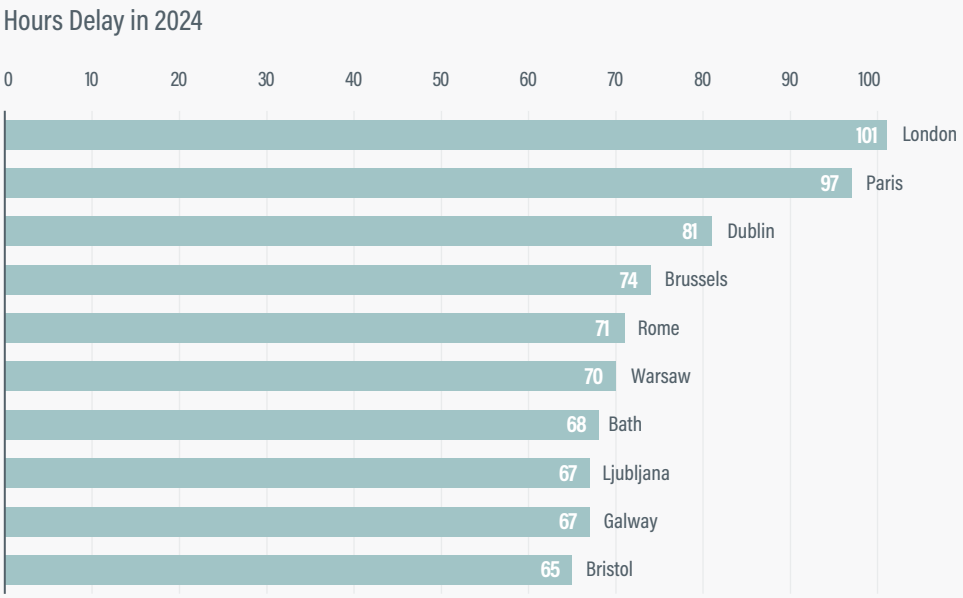
FIGURE 2. Per capita transport greenhouse gas emissions in Europe, 2023



With the exception of Albania, Moldova and Ukraine, all European countries have per capita transport emissions well above the global average. Luxembourg stands out in particular, driven by cross-border fuel demand.

Source: See endnote 81 for this section.

FIGURE 3. Hours of annual average traffic delays in major European cities, 2024



In 2024, travellers in these cities lost an average of 65 to 101 hours to traffic congestion — the equivalent of spending 3 to 4 full days stuck in traffic per year.

Source: See endnote 95 for this section.

although the average share of renewable energy[i] used for road and rail transport in the EU increased from below 2% in 2005 to 10.1% in 2023.[85] **Oil-derived fuels accounted for 92.7% of the region's energy consumption in transport in 2022 (including international navigation and aviation).**[86] Most of this oil use was for road transport, representing 73.6% of the EU total in 2022.[87] However, the picture varied by country (see Policy developments section).[88]

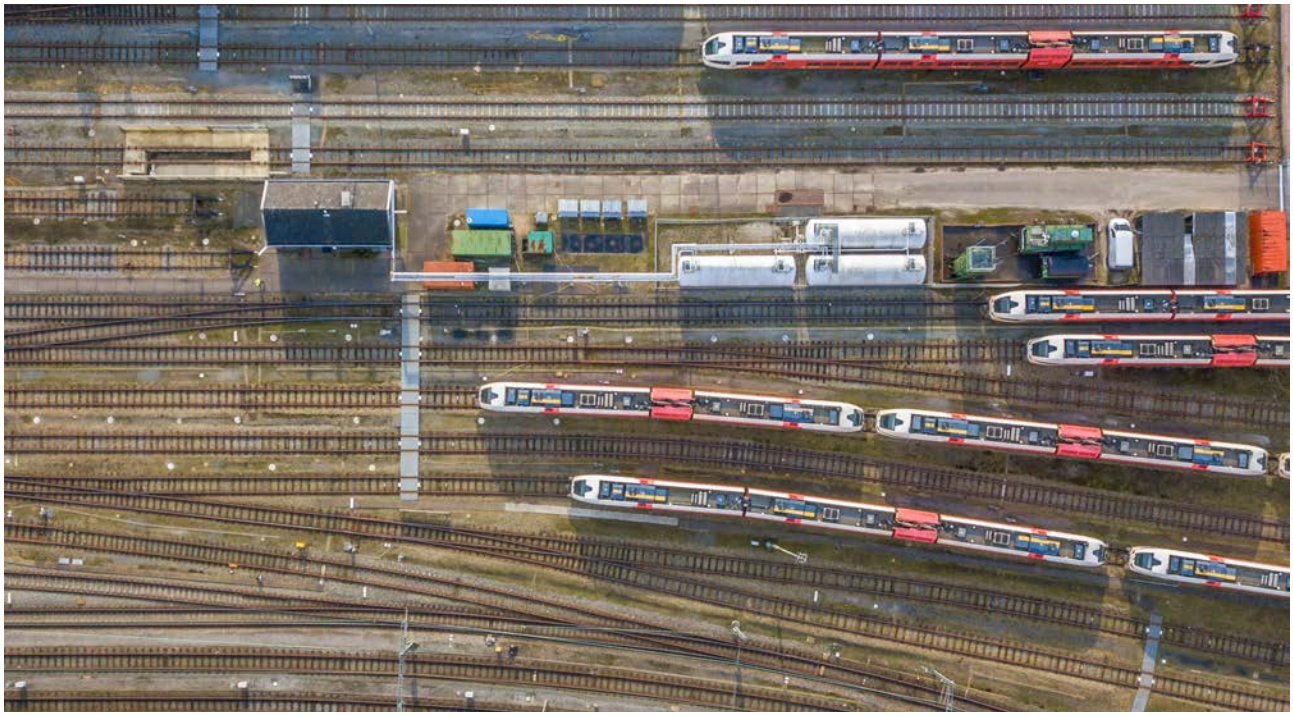
Despite intensified decarbonisation efforts, European transport emissions have not fallen significantly since 2005.[89] The region's transport greenhouse gas emissions decreased only 0.8% in 2023, and national-level transport emissions are projected to dip below 1990 levels only by 2032.[90] Under current policies and measures, European transport emissions are projected to remain 4% above 1990 levels by 2030; however, with additional policies focused on low-carbon fuels, zero-emission technologies, and a modal shift from private cars to public transport, emissions could fall 8% below 1990 levels by 2030.[91]

Given their dominance in the region, passenger cars contributed nearly three-quarters (73.2%) of Europe's transport greenhouse gas emissions in 2022 (including domestic transport and international bunkers).[92] Despite improvements in vehicle and fuel efficiency, and growth in the European electric vehicle market in 2023, tailpipe emissions from passenger cars have remained high (at nearly 500 million tonnes of CO_2 annually), driven by rising vehicle numbers and sizes, and longer distances travelled.[93]

Congestion in and around Europe's urban centres cost the region an estimated USD 113.4 billion (EUR 110 billion) per year, or 1% of the EU's GDP, based on research from 2012.[94] The European city with the highest average traffic delays in 2024 was London (101 hours of delay), followed by Paris with 97 hours of delay and Dublin with 81 hours of delay (Figure 3).[95]

Railways, which have the lowest emissions per kilometre and unit transported, contributed 0.3% of EU transport greenhouse gas emissions in 2022.[96] **Rail is the only EU transport sector in which greenhouse gas emissions have consistently fallen since 1990 (down more than 70%), a trend largely attributable to the electrification of rail lines and to the declining carbon intensity of the EU electricity mix.**[97] Railways in the EU produced 3.5 million tonnes of CO_2 equivalent in 2022, down 8% from 2021.[98]

i Including biofuels, renewable electricity, or hydrogen and synthetic fuels of renewable origin.



- Of the 202,000 kilometres of rail lines operating in the EU in 2022, nearly 57% had been electrified, a 31% increase compared with 1990.[99]
- Luxembourg had the region's highest share of electrified railway lines in 2023, at 96.7%.[100]

In 2022, aviation contributed around 3.8% to 4% of the EU's total greenhouse gas emissions and 13.9% of the region's transport emissions (the second largest source after road transport); it has experienced the fastest emission growth among transport modes in recent decades.[101] Emissions from international aviation in the EU fell 58% in 2020 as a result of the COVID-19 pandemic, but then rose 25% in 2021 and 57% in 2022.[102] Europe's demand for aviation is expected to return to 2019 levels by 2025, and aviation greenhouse gas emissions are projected to show the strongest increase among transport modes by 2030.[103] Research by the European Aviation Safety Agency found that two-thirds of the sector's global warming impact in 2018 was from non-CO_2 effects (including persistent contrails, nitrogen oxides and soot particles), leading the EU to initiate work in 2025 to measure these effects and include these emissions in the EU Emission Trading System as of 2027.[104]

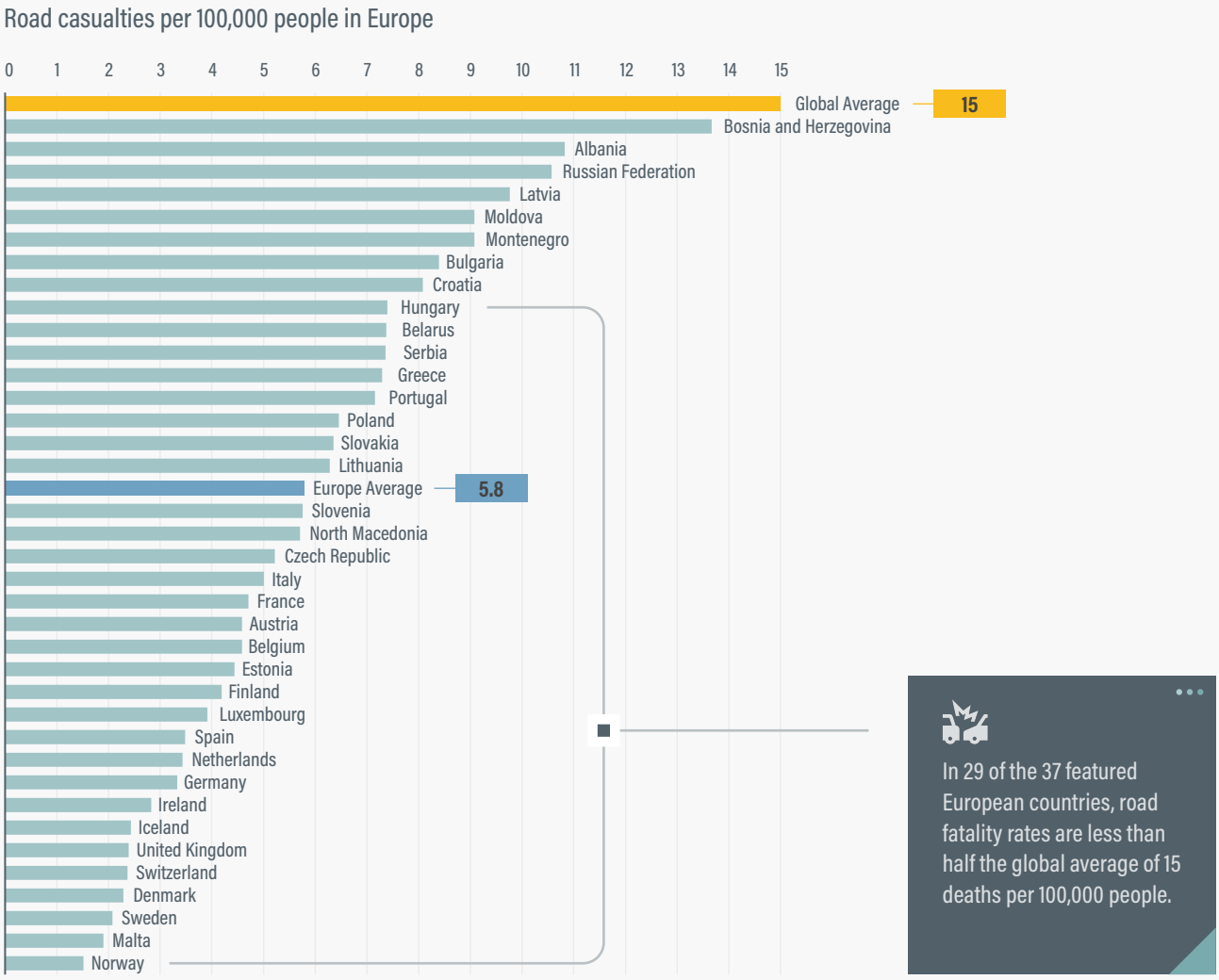
Maritime transport accounts for 3-4% of the EU's total CO_2 equivalent emissions.[105] **The maritime sector contributed more than a quarter (26%) of all methane emissions from the EU transport sector in 2022.**[106] EU emissions of methane – a greenhouse gas roughly 80 times more potent than CO_2 at warming the Earth on a 20-year time scale – have at least doubled between 2018 and 2023.[107] **Overall, the share of European greenhouse gas transport emissions from aviation and international maritime transport is projected to increase from around 26% in 2022 to more than 47% in 2050.**[108]

In addition to being a leading contributor to climate change, Europe's transport sector is particularly vulnerable to its consequences. Transport costs associated with climate change-induced hazards are projected to increase sharply by the 2080s, potentially exceeding USD 10.35 billion (EUR 10 billion) annually, up 20-fold from 2024.[109] Heatwaves in the region have led to road melting, failures of railway assets, and speed restrictions to prevent track buckling, causing major disruptions and impeding connectivity.[110] Ports, especially in northern and western Europe, are particularly vulnerable to sea-level rise, storm surges and changes in wave agitation.[111]

- Across Europe, the annual damage to transport infrastructure in the 2000s was around USD 828 million (EUR 800 million), of which an estimated 51% was from river flows and 27% from heatwaves.[112]
- Heatwaves are expected to account for 92% of the total damage to the region's transport infrastructure by the 2080s, particularly affecting roads and railways.[113]

Transport has been a major contributor to health-damaging air pollution, accounting for 9% of Europe's air pollutant emissions in 2019 and an estimated 569,000 deaths annually in the region.[114] Although progress has been made in reducing air pollution from road transport, emissions of certain air pollutants from aviation and shipping have continued to increase.[115]

FIGURE 4. Road casualties per 100,000 people in Europe, 2021



Source: See endnote 122 for this section.

- Transport contributes more than half of all nitrogen oxide (NO_x) emissions in the region, which not only harm human health but also contribute to acid rain formation and the acidification of oceans.[116]
- Thanks to advances in road transport, the EU has observed significant decreases in particulate matter, with emissions of PM_{10} and $PM_{2.5}$ dropping 46% and 58%, respectively, between 2000 and 2022.[117]

In 2022, more than 100 million Europeans were exposed to noise pollution from transport, primarily from road traffic, despite policies and regulations targeting motor vehicle sound levels and aircraft noise management.[118] **As of 2024, more than 20% of the region's population lived in areas where road traffic noise levels exceed EU regulations and can cause significant harm to health and well-being; this share rises above 30% if the stricter thresholds of the World Health Organization (WHO) are applied.**[119]

Although Europe experienced the fewest road traffic fatalities globally in 2021, road crashes are the leading cause of death for individuals aged 5-29 years, resulting in one person dying every seven minutes and more than 62,000 people being killed on the region's roads every year.[120] **Despite a 3% decrease in road fatalities in 2024, most EU countries are not on track to meet the region's goal of halving road deaths by 2030.**[121] In 2021, Bosnia and Herzegovina recorded the highest number of road casualties per 100,000 people, at 13.67, while Norway had the lowest number (1.52) (Figure 4).[122]

Policy and investment developments

Tackling transport emissions has been a key focus in Europe, and the European Green Deal, launched in 2021, is a key driver of EU efforts to become climate-neutral by 2050.[123] This EU climate law set an intermediate target of reducing net greenhouse gas emissions at least 55% below 1990 levels by 2030.[124] Since the launch of the European Green Deal, the EU and individual countries in the region have prepared Nationally Determined Contributions (NDCs), Long-Term Low Emission Development Strategies (LT-LEDS) and National Adaptation Plans (NAPs) in the framework of the United Nations Framework Convention on Climate Change (UNFCCC). The region has also pursued other legislative and policy reforms and initiatives.

- The EU Sustainable and Smart Mobility Strategy of 2020 is centred on supporting the transport sector's transformation by: 1) making all modes more sustainable, 2) shifting passenger and goods transport towards more sustainable alternatives in a multi-modal transport system, and 3) setting the right incentives to drive the transition, in particular by internalising the external costs of transport through carbon pricing and infrastructure charging mechanisms.[125]
- The "Fit for 55" Package of 2021 puts forward regulatory reforms on transport, energy, climate, and taxation, with a view to ensuring that the EU is on track to reduce emissions at least 55% by 2030.[126]
- The EU is seeking to revise its Emission Trading System (ETS) to include the aviation and maritime sectors, and to develop a new, separate ETS2 to reduce emissions from road transport.[127]
- The EU Zero Pollution Action Plan sets ambitions for 2030 to reduce the health impacts of air pollution by 55% and the share of people chronically disturbed by transport noise by 30%, compared to 2005.[128]

The EU Clean Industrial Deal of 2025 outlines actions to turn decarbonisation into a driver for growth in key European industries, such as transport through a Sustainable Transport Investment Plan, a Hydrogen Mechanism and the implementation of the EU Critical Raw Materials Act.[129] **Contrary to expectations, the Deal does not include a 90% emission reduction target for 2040, which some argue risks creating regulatory and investment uncertainty in the transport sector.**[130] The Deal is designed to lower energy prices, create quality jobs, and foster an enabling environment for companies to thrive, and includes components relevant for the decarbonisation of the aviation and shipping industries.

- The Deal commits to boosting annual EU investments in transport, energy, and industrial innovation and to scale up by around USD 496.8 billion (EUR 480 billion) compared to the previous decade.[131]
- A dedicated Sustainable Transport Investment Plan, expected in 2025, will outline short- and medium-term measures to prioritise support for specific renewable and low-carbon fuels for aviation and waterborne transport. To allow these greener alternatives to compete on a level playing field, it will be paramount to include measures that bridge their current price gap with fossil fuels.[132]
- A Hydrogen Mechanism will seek to connect suppliers with potential buyers (e.g., airlines and shipping companies) while leveraging financing and de-risking instruments.[133]
- The Deal seeks to speed implementation of the Critical Raw Materials Act of 2023, which aims to ensure a secure and sustainable supply of critical raw materials for European industries, such as transport, while lowering EU dependence on imports from single-country suppliers.[134] Lithium, cobalt and nickel are indispensable for the region's shift to zero-emission electric transport.

As of 25 May 2025, only five European countries – Andorra, Moldova, Montenegro, Switzerland and the United Kingdom had submitted to the United Nations Framework Convention on Climate Change (UNFCCC) their third generation Nationally Determined Contributions (NDCs) to the United Nations Framework Convention on Climate Change.[135] Of these five NDCs, two (Moldova and Switzerland) include targets for reducing transport greenhouse gas emissions.[136]

- Moldova's 2025 NDC sets out a target to reduce transport greenhouse gas emissions 52% below 1990 levels by 2030, as part of efforts to cut economy-wide emissions 75% below 1990 levels by 2035 and to achieve carbon neutrality by 2050.[137] The NDC outlines several mitigation and adaptation measures in the transport sector, while emphasising the importance of a just transition.[138]
- Switzerland's 2025 NDC aims to cut national transport emissions 41% below 1990 levels by 2035, 57% by 2040 and 100% by 2050.[139] It introduces targets and actions specific to transport emissions reduction and adaptation, and refers directly to the outcomes of the First Global Stocktake adopted at the 2023 UN Climate Change Conference (COP 28), which calls on countries to accelerate emission reductions from road transport by developing infrastructure and deploying zero- and low-emission vehicles, while transitioning away from fossil fuels in a just, orderly and equitable manner to achieve net zero emissions by 2050.[140]

For the latest analysis of transport commitments in NDCs, including those expected ahead of COP 30, see the NDC Transport Tracker by GIZ and SLOCAT*, a database on ambition, targets and policies in NDCs and Long-Term Strategies.*[141]

The EU's second-generation NDC of 2023 reflects essential elements under the "Fit for 55" Package and aims to cut the region's greenhouse gas emissions 55% below 1990 levels by 2030.[142] This is more ambitious than the 40% target set in the EU's first NDC.[143] The EU is expected to release its third-generation NDC at the 2025 UN Climate Change Conference (COP 30); the delay in submission has been attributed to European elections and to plans to first approve a new EU climate target for 2040.[144]

As of 25 May 2025, 29 European countries as well as the EU had submitted LT-LEDS (Long-Term Low Emission Development Strategies) to the UNFCCC.[145] LT-LEDS complement NDCs and reflect countries' strategies to 2050 and beyond. Ireland, Serbia and Switzerland were the only three European countries to submit updated LT-LEDS during the 2023-2024 period.

- Ireland's LT-LEDS of 2024 aims to reduce the country's transport emissions 50% below 2018 levels by 2030 and to achieve a carbon-neutral transport sector by 2050.[146] To reach this goal, Ireland's Climate Action Plan 2024 calls for reducing road transport demand, shifting to sustainable modes of transport and electrifying vehicle fleets. The Action Plan sets concrete targets including a 50% increase in daily active travel journeys and a 130% increase in daily public transport journeys by 2030.[147]
- Switzerland's LT-LEDS of 2024 targets a 57% reduction in transport emissions by 2040 and a completely emission-free transport sector by 2050.[148] Following the latest revision of the country's CO_2 Act in 2024, proceeds from emission rights for aircraft will be used to fund international night train connections and to develop sustainable aviation fuels.[149]

Four countries from Eastern Europe – Albania, Bosnia and Herzegovina, Moldova and Serbia – had submitted National Adaptation Plans (NAPs) to the UNFCCC as of 25 May 2025.[150] NAPs support countries, especially developing and least-developed countries, in planning and implementing medium- and long-term adaptation to climate change.

- Moldova's NAP of 2024 calls for better integrating climate change considerations into sectoral planning and budgeting, in recognition of the severe damage to transport infrastructure caused by extreme weather events, as well as the related social and economic costs.[151] The NAP recommends applying climate-resilient standards throughout the entire life cycle of transport infrastructure – from design to construction and maintenance – as well as modernising road drainage systems, improving rainwater collection, and afforesting areas affected by floods and landslides adjacent to roads.[152]
- Serbia's NAP of 2024 focuses mainly on enhancing the

resilience of road transport infrastructure to the impacts of climate change, and also recognises the need to revise construction standards and practices and to adapt the transport sector regulatory framework.[153] The NAP calls for improvements in the early warning system for road infrastructure.[154]

The shift from fossil fuels to low-carbon fuels and electrification has been a major focus of EU legislative efforts. As part of its "Fit for 55" Package", in 2023 the EU adopted the revised Regulation 2019/631, which in practical terms would translate into the phase-out of new sales of ICE vehicles from 2035.[155] The regulation requires reductions in CO_2 emissions of 55% for new cars and 50% for new vans from 2030 to 2034, and 100% from 2035 (all compared to 2021 levels).[156] This transition to zero-emission vehicles would put CO_2 emissions from EU road transport on a path to peak at nearly 800 million tonnes as early as 2025, and then fall by around one-quarter by 2035.[157]

Across Europe, fossil fuel subsidies have contributed to growing fossil fuel use and related greenhouse gas emissions. In 2023, fossil fuel subsidies in the region totalled USD 1,265 per capita, the second highest level after North America (USD 2,172 per capita) and well above the global average (USD 813 per capita).[158] Most EU Member States lack concrete plans for phasing out fossil fuel subsidies, which are projected to remain constant between 2023 and 2030.[159] Although the EU's 8th Environment Action Programme calls for a phase-out without delay – and many countries have ambitions to move away from fossil fuel use – only Denmark has translated this ambition into law.[160]

- EU fossil fuel subsidies were relatively stable from 2015 to 2021, then more than doubled in 2022 in response to high energy prices in the wake of the COVID-19 pandemic and the Russian Federation's invasion of Ukraine; in 2023, subsidies fell to USD 114.9 billion (EUR 111 billion).[161]
- More than 60% of EU fossil fuel subsidies granted in 2023 were spent in three countries: Germany (USD 42.4 billion or EUR 41 billion), Poland (USD 16.6 billion or EUR 16 billion) and France (USD 15.5 billion or EUR 15 billion).[162]
- As of 2023, 43% (USD 49.4 billion or EUR 47.7 billion) of EU fossil fuel subsidies had a planned end-date before 2025, while a further 9% (USD 10.5 billion or EUR 10.1 billion) had an end-date by 2030; however, 48% (USD 55 billion or EUR 53.1 billion) of fossil fuel subsidies had no planned end-date.[163]

In 2024, the revised EU Regulation 2019/1242 set CO_2 emission standards for heavy-duty vehicles[ii], calling for a near-complete phase-out of diesel-powered models by 2040.[164] The regulation signals a turning point for the European heavy-duty vehicle segment, and its implementation will likely support the shift of goods and passenger transport towards more environmentally efficient modes such as railways and inland waterways.[165]

- The revisions call for reductions in the average CO_2 emissions of heavy-duty vehicles of 45% by 2030, 65% by 2035 and 90% by 2040 (all compared to 2019 levels).[166]
- They also mandate that 90% of new city buses be zero-emission by 2030, and 100% by 2035.[167] In 2024, half (49%) of all new public transport buses in EU cities were zero-emission vehicles.[168]

The EU's vehicle efficiency standards (expressed as CO_2 emission standards) for cars, vans and heavy-duty vehicles have narrowed the emissions gap needed to align road transport with the goals of the Paris Agreement, by 66% for heavy-duty vehicles and 75% for light-duty vehicles.[169]

In March 2025, the European Commission launched an Action Plan to respond to the rapid technological advancements and fierce global competition in the region's automotive sector; critics worry that the plan will derail EU transport emission efforts, as it proposes extending the timeline for automakers to comply with the 2025 emission reduction targets for cars and vans, up until 2027.[170] The Action Plan aims to stimulate demand for European-made electric vehicles – such as by encouraging national incentives – and is accompanied by a strategy to decarbonise corporate fleets, which account for around 60% of new car registrations in Europe.[171] Yet critics have warned that the delay in compliance could lead European car makers to sell up to 880,000 fewer electric vehicles during the extension period.[172] Amid growing tensions around factory closures and job losses, European automakers have called for further concessions, including a moratorium on the complete phase-out of ICE vehicles.[173]

Ongoing challenges related to international trade tariffs have triggered similar policy reactions at the national level. In the United Kingdom, new hybrid and plug-in hybrid cars will be allowed on the market for an additional five years (until 2035), and low-volume, luxury car manufacturers will be exempted from the 2030 ban on ICE vehicles.[174] France, meanwhile, revised its electric vehicle subsidy programme in 2023 to favour vehicles with lower carbon footprints, ultimately disadvantaging Chinese models.[175]

As of 2022, the EU had an average of 10 electric vehicles per charging station, and just three countries (Germany, France and the Netherlands) accounted for more than two-thirds of all EU charging points.[176] **Meanwhile, 10 countries did not have a single charger per 100 kilometres of road, presenting a challenge for electric cross-border travel in Europe.**[177] **The EU's Sustainable and Smart Mobility Strategy prioritises infrastructure development for zero- and low-emission vehicles and sets a regional target for 1 million public charging points by 2025.**[178] Efforts are also needed at the national and sub-national levels to deploy a comprehensive and interoperable refuelling and recharging infrastructure network, while reinforcing grids to cope with growing electricity loads.

- As part of the EU's "Fit for 55" Package, the Regulation 2023/1804 on the deployment of alternative fuels infrastructure ("AFIR"), in force since 2024, sets minimum national targets for 2025 and 2030 for the deployment of infrastructure to support the use of alternative fuels (electricity, hydrogen, liquefied methane) in road vehicles, vessels and stationary aircraft.[179] The AFIR puts in place requirements for price transparency, common minimum payment options and coherent customer information for electric vehicles across the EU.[180]
- In March 2025, Poland launched two major funding programmes to support the development of charging infrastructure (including high-power charging stations) for heavy transport; the initiatives aim to accelerate compliance with the AFIR and are valued at USD 500 million (PLN 2 billion), funded by the EU's Modernisation Fund.[181]
- Amsterdam (Netherlands) launched a six-month electric vehicle smart charging pilot in March 2025 aimed at making charging more responsive to real-time electricity availability and prices, with the goal of optimising the use of the grid while also reducing grid load and cutting costs for consumers.[182]
- An estimated 90% of the EU's electric vehicle charging needs are satisfied in buildings (i.e., overnight at home or daily at the workplace).[183] In 2024, the EU adopted its revised Energy Performance of Buildings Directive, which complements the AFIR by introducing requirements for installing recharging infrastructure in residential and commercial buildings while removing administrative barriers.[184]

The EU has achieved its target for 10% of all energy used in road and rail transport to originate from renewable sources[iii] by 2020, as set in Renewable Energy Directive 2009/28/EC.[185] To support decarbonisation, the transition to

ii Heavy-duty vehicles include trucks (over 3.5 tonnes), buses and coaches.
iii Including biofuels, renewable electricity, or hydrogen and synthetic fuels of renewable origin.

electric mobility must go hand in hand with a shift towards clean electricity sourced from renewables.

- Preliminary estimates from 2023 revealed that eight EU countries had exceeded the 10% target: Austria, Belgium, Denmark, Germany, Italy, Malta, the Netherlands and Spain.[186]
- Sweden had the EU's highest share of renewables in transport in 2023, at 33.6%.[187] This was enabled by the country's ambitious biofuels policy, which requires fuel suppliers to reduce greenhouse gas emissions from petrol, diesel and aviation fuel by a certain percentage each year by blending them with biofuels.[188]
- Croatia had the EU's lowest share of energy from renewable sources in transport in 2023, at 1%.[189]

The revised Renewable Energy Directive EU/2023/2413 of 2023, part of the "Fit for 55" Package, set a new binding EU target for at least 42.5% renewable energy by 2030 (but aiming for 45%), through the use of renewable fuels, including hydrogen, in sectors where electrification is not yet a feasible option (such as shipping and aviation).[190] For these hard-to-electrify sectors, the directive sets new binding targets for renewable fuels of non-biological origin, with renewable hydrogen expected to account for at least 1% of total energy supplied to the EU's transport sector by 2030.[191]

In aviation and maritime transport, Europe has embraced measures including demand reduction and a shift to more sustainable modes. The ReFuelEU Aviation and FuelEU Maritime regulations, adopted in 2023, aim to support the uptake of renewable and low-carbon fuels in these sectors.[192]

- In 2023, following approval by the European Commission, France enacted new legislation banning short-haul domestic flights that can be completed by train in less than 2.5 hours.[193] As of March 2025, the ban applied only to three routes: from Paris' Orly airport to Bordeaux, Lyon and Nantes.[194]
- Thanks to Austria's biggest solar farm, the Vienna airport has been carbon neutral since 2023, meeting 40% of the site's total power demand with solar and aiming to shift to 100% zero-emission fleets for handling passenger and ground operations.[195]
- Meanwhile, some European countries have continued with airport expansions. The UK government has granted approval for a new terminal at Luton Airport – London's fourth largest – enabling it to accommodate an additional 32 million passengers per year.[196]

For more on the latest policy developments in the aviation and shipping sectors, see Section 4.9 Aviation and Section 4.10 Shipping (both in Module 4).

The latest revisions of the EU Emission Trading System (ETS) will impact the aviation and maritime sectors, while a new, separate ETS2 aims to reduce emissions from road transport. The 2023 revision of the ETS Directive (2003/87/EC) extended the system's scope to cover maritime transport and reduced the share of no-fee emission allowances granted to airlines.[197] Co-legislators also mandated the European Commission to implement a monitoring, reporting and verification system for non-CO_2 impacts of aviation starting in January 2025.[198]

A new, separate ETS2, to become operational in 2027, will cover CO_2 emissions from fuel combustion in road transport, among other sectors.[199] In practical terms, the ETS2 will require fuel suppliers to monitor and report their emissions, as well as surrender a corresponding number of allowances to cover these emissions. Implementation of the ETS2 is expected to reduce emissions 42% below 2005 levels by 2030.[200] The revised Directive will require all revenues generated through the ETS to be invested in climate action, energy transformation and tackling social challenges.[201]

Beyond decarbonisation, the EU has pursued policy efforts to tackle air pollution from the transport sector. In addition to overall directives, air pollutants from transport are regulated through mode-specific legislation.

- In December 2024, the revised Ambient Air Quality Directive came into force, updating air quality standards to ensure closer alignment with WHO guidelines, while facilitating the achievement of the EU's zero-pollution ambition by 2050.[202]
- The Euro 7 standard, adopted in 2024, introduced more stringent limits for heavy-duty buses and trucks for various pollutants, including some that were not regulated previously, such as nitrous oxide (N_2O).[203] It also imposed stricter limits for particle emissions generated by braking vehicles – with dedicated limits for electric vehicles – and stipulated new rules on mileage and lifetime for all vehicles.[204]

As of 2024, the EU's revised Trans-European Transport Network (TEN-T) policy mandates urban nodes to adopt a Sustainable Urban Mobility Plan (SUMP) and to collect and regularly submit data on urban mobility indicators.[205] In 2023, more than three-quarters of the region's residents lived in cities, which generate 23% of total European greenhouse gas emissions and concentrate health-damaging pollution and road traffic injuries.[206] The TEN-T policy strengthens the role of cities in enabling sustainable, efficient, multi-modal and high-quality transport infrastructure.[207]

Many European countries have adopted SUMPs and Urban Vehicle Access Regulations (UVARs) to advance

a balance of transport modes while encouraging a shift towards higher-quality and sustainable transport.[208] **In Europe, 73% of UVARs were low- and zero-emission zones as of 2022.**[209] In addition to low-emission zones (LEZs), ultra low-emission zones (ULEZs), and freight transport LEZs, UVARs include congestion charging and parking schemes. These are key instruments for increasing road safety while limiting congestion and reducing traffic-related CO_2 emissions and air and noise pollution.

- Valencia (Spain) introduced an LEZ in March 2025 to ban highly polluting vehicles from entering its most sensitive areas; it is offering free public transport tickets to those affected to avoid disproportionately impacting lower-income households.[210]
- Amsterdam and Rotterdam (Netherlands) implemented zero-emission zones for freight (ZEZ-F) by 1 January 2025, and another 31 Dutch cities announced aims to implement ZEZ-F, following the National Implementation Agenda for Urban Logistics signed in 2021.[211]
- In April 2025, Paris (France) approved a car ban that includes the pedestrianisation of an additional 500 city streets.[212] To discourage the use of sport utility vehicles (SUVs), a 2024 referendum in Paris resulted in the tripling of parking fees for vehicles of 1.6 tonnes or more (and for electric vehicles of 2 tonnes or more) to USD 18.6 (EUR 18) an hour.[213]
- In the three European cities with the best-known congestion charging schemes – London (United Kingdom), Milan (Italy) and Stockholm (Sweden) – implementation has reduced CO_2 emissions 14%, traffic jams 20% and road crashes 20%.[214]
- In France and Spain, time-differentiated congestion charges have been applied to all vehicles on several short stretches of inter-urban motorways.[215]

Closer integration between urban mobility and land use planning has gained traction in the region. Ireland's 2024 Climate Action Plan seeks to integrate climate action and transport in the spatial planning system to better enhance placemaking and accessibility considerations.[216] It also calls for the widespread development of 15-minute neighbourhoods across major cities.[217]

As of 2025, 13 European countries had national cycling strategies in place. Several countries (Denmark, Estonia, Greece, Malta, Slovenia and Ukraine) began work on such strategies in 2024.[218] Lithuania was the only country to adopt its first-ever national cycling strategy during the 2023-2024 period.[219]

The EU's European Declaration on Cycling in 2024 marked an important turning point, elevating cycling to a strategic policy priority and recognising it as "the most sustainable, accessible and inclusive, low-cost and healthy form of transport and recreation".[220] The Declaration calls for the establishment of safe and coherent cycling networks in cities, better links with public transport, secure parking spaces, the deployment of charging points for e-bikes and bike highways connecting cities with rural areas.[221] It commits to investing USD 4.7 billion (EUR 4.5 billion) under the 2021-2027 EU Cohesion policy to improve cycling infrastructure across the region.[222]

In 2023, 69% of European countries had national walking policies or similar measures, although only 6 countries – Austria, the Czech Republic, Germany, Greece, Norway, Portugal, and the United Kingdom – had specific national walking policies.[223] **The first-ever Pan-European Master Plan on Walking, launched in 2024, has spurred efforts to work with national governments to develop and implement**

walking policies.[224] The Master Plan was elaborated by a regional Partnership on Healthy Active Mobility and aims to: develop and implement national walking policies and plans; integrate walking into national policies and promote implementation at the sub-national level; increase walking activity; enhance the safety and security of pedestrians; and extend and improve the infrastructure for walking.[225]

- Portugal's National Strategy for Active Pedestrian Mobility 2030 seeks to increase the modal share of pedestrian journeys to 35%, expand accessible pedestrian space by 50% and reduce sedentary lifestyles 15% by 2030. It outlines a comprehensive plan to enhance pedestrian travel, accessibility and well-being through measures to transform public spaces, create a pedestrian-friendly environment and address challenges.[226]
- The Netherlands, through a group of more than 60 government and academic institutions, social organisations, and companies, launched a National Walking Masterplan in October 2024 that contains actions aimed at improving pedestrian-friendliness, encouraging people to walk more and better organising public space.[227]

Although Europe has historically invested heavily in road infrastructure compared to rail, this trend has been slowly reversing in recent years.[228]

- In 2024, the European Commission selected 134 sustainable, safe and smart transport infrastructure projects to receive more than USD 7.25 billion (EUR 7 billion) in EU grants from the Connecting Europe Facility, with rail projects receiving an estimated 80% of these funds.[229]
- As part of its National Transportation Plan for 2022-2033, Norway is allocating around USD 35.19 billion (EUR 34 billion) to the rail sector over the decade, with the aim of shifting passenger and freight road transport to rail. Major projects include the InterCity network (which will add 270 kilometres of double tracks and allow speeds up to 250 kilometres per hour), as well as improvement of the 4,000 kilometre network of outdated rail infrastructure by building new tracks, updating the existing network, investing in new digital signalling and strengthening cross-border railway connections.[230]
- Among European countries, the highest increases in the share of rail investment between 2008-2012 and 2018-2022 occurred in France (up 21.7 percentage points) and Denmark (up 20 percentage points); rail investments also grew in Albania, Bulgaria, Croatia, the Czech Republic, Germany, Ireland, Italy, North Macedonia, Norway, Poland, Serbia and Slovenia.[231]

Partnerships in action

SLOCAT partners engaged in dozens of actions during 2023-2024, including:

- The **NetZeroCities** project co-ordinates the European Commission's 100 Climate-Neutral and Smart Cities Mission, supporting cities in developing and implementing Climate City Contracts.[232] These contracts serve as comprehensive roadmaps towards achieving climate neutrality by 2030, integrating specific targets and actions across sectors, including urban mobility.[233] The project brings together more than 30 partners including EIT Climate-KIC (lead), ICLEI Europe, Eurocities and the Urban Transitions Mission Platform.[234]
- **Ricardo** is collaborating with the sustainable hydrogen-powered shipping consortium **sHYpS** to advance zero-emission maritime transport by developing hydrogen fuel cell propulsion systems to power the next generation of passenger ships.[235] By focusing on rapid prototyping, safety protocols, and supply chain logistics, the initiative aims to fast-track the deployment of hydrogen technologies in the maritime sector.[236] The project supports the EU's ambition to decarbonise shipping and strengthen hydrogen infrastructure as part of the broader green transition.
- **TRT Trasporti e Territorio**, an Italian consultancy specialising in transport policy and planning, has led a major study for the European Commission on climate adaptation needs for the Trans-European Transport Network (TEN-T).[237] The study identifies investment priorities to strengthen the climate resilience of critical cross-border infrastructure corridors.[238] As Europe faces escalating impacts from extreme weather, the work supports evidence-based planning to safeguard connectivity, supply chains and regional cohesion while accelerating the shift to sustainable, low-carbon transport.[239]
- The **UPPER project**, co-ordinated by the POLIS Network in collaboration with Eurocities, is driving a transformation in public transport across Europe.[240] Central to this initiative is a new shared platform designed to accelerate innovation, knowledge exchange and capacity building among cities, transport authorities and operators.[241] The platform hosts two key tools: U-KNOW, a knowledge-sharing database, and U-TRANSFER, a tool to adapt and replicate best practices in diverse urban contexts.[242] These resources enable stakeholders to implement inclusive, efficient and low-carbon mobility solutions tailored to local needs.

MODULE 3 | 3.4

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Latin America and the Caribbean Regional Overview

DEMOGRAPHICS, TRANSPORT AND SUSTAINABILITY DATA

Indicators	Latin America and the Caribbean	Global
Population size (2023)	651 million	8,000 million
Population growth (2015-2023)	6.5%	8.5%
Urban population share (2023)	85%	57%
Urban population growth (2015-2023)	10.7%	16%
GDP per capita (2023)	USD 8,419 (constant 2015 USD)	USD 11,337 (constant 2015 USD)
GDP growth (2015-2023)	8.9%	22.8%
Share of women employed in transport and storage (2023)	14.2%	15.6%
Motorisation rate (2022)	282.1 vehicles per 1,000 people	218.7 vehicles per 1,000 people
Share of urban population with convenient access to public transport (2020)	42.3%	52%
Share of rural population with access to all-weather primary and secondary roads (2020)	35.4%	38%
Transport total GHG emissions (2023)	615 million tonnes CO_2eq	7,123 million tonnes CO_2eq
Per capita transport GHG emissions (2023)	0.94 tonnes CO_2eq	0.89 tonnes CO_2eq
Fossil fuel subsidies (explicit and implicit) (2023)	USD 486 per capita (constant 2021 USD)	USD 813 per capita (constant 2021 USD)
Share of renewable energy sources in transport (2022)	12.5%	4.6% for 2023
Carbon intensity of electricity generation (2023)	272.4 gCO_2/kWh	417 gCO_2/kWh
Transport contribution to air pollution (2019)	6.1%	6%
Premature deaths attributable to air pollution by transport (2019)	1.7 per 100,000 people	2.3 per 100,000 people
Road casualties (2021)	14.6 per 100,000 people	15 per 100,000 people

Source: See endnote 1 for this section.

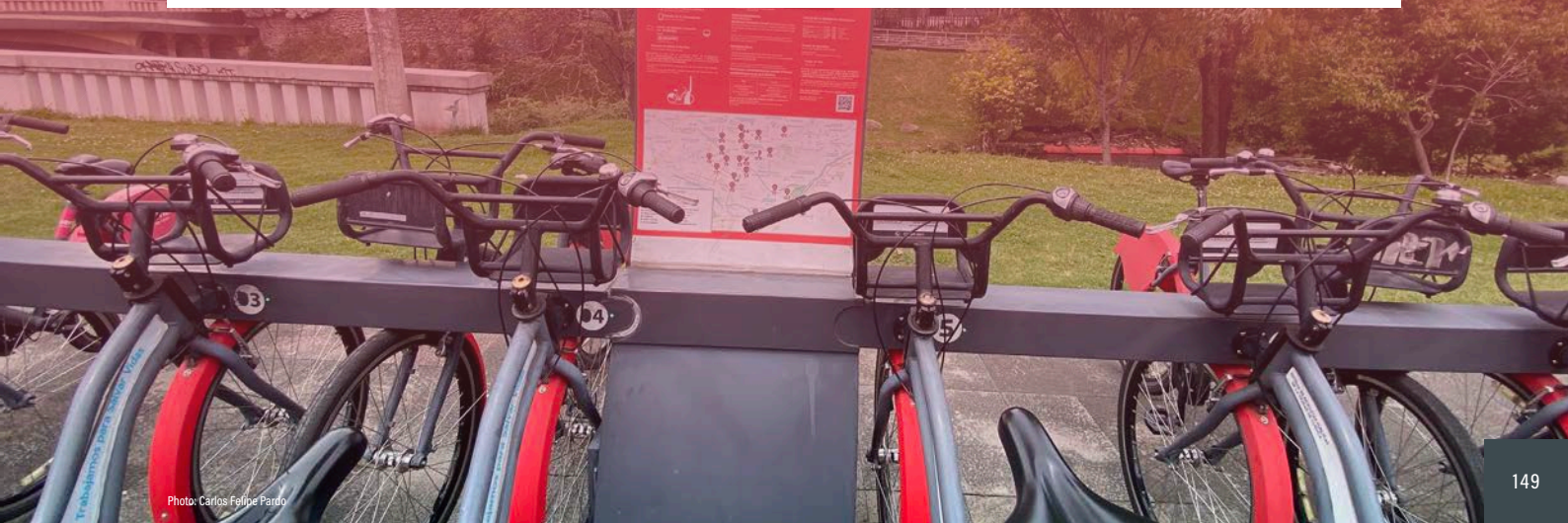

Photo: Carlos Felipe Pardo

KEY FINDINGS

Demand, use and access

- In Latin America and the Caribbean, around 42% of the urban population on average across countries had convenient access to public transport in 2020-2022. This was the third lowest regional value after Africa (33%) and Oceania (41%), and below the global average of 52%. In nearly 46% of assessed cities in the region (130 out of 285), half or more of the population had convenient access to public transport during 2020-2022.

- Although public transport has a higher market share than private transport in most of the region's cities, private motorisation (particularly motorcycles) is increasing due to factors such as service coverage, accessibility, subsidy levels and personal safety.

- In Latin America and the Caribbean, investments in pedestrian infrastructure have remained low, pointing to a key opportunity for inclusive, low-carbon transport planning.

- Passenger mass transport systems continued to expand as countries invest in extending existing metro lines and planning and developing new cable cars and urban rail. The expansion and modernisation of bus systems remained the dominant trend in public transport, although interest in extending passenger rail services has grown.

- At least eight Latin American cities have invested in cable car systems to address the accessibility and connectivity challenges faced by hillside communities, which are mostly informal and lack services.

- Informal transport services still account for a large share of motorised trips in low- and middle-income countries in Latin America and the Caribbean, including more than half of all trips in some cities. Informal transport services – such as minibuses, moto-taxis and tuk-tuks – improve access to opportunities and mobility and are valued for their responsiveness, flexibility and versatility. Despite these advantages, they often suffer from poor service quality—including overcrowding, unsafe driving, unreliable "fill-and-go" operations, limited accessibility for people with disabilities, and unclear routes.

KEY FINDINGS

- Road transport accounted for as much as 70% of the region's surface freight transport (roads, rail, inland waterways) in 2021. This fleet is mostly low-capacity trucks, which offer lower operational efficiency and generate more emissions than other vehicles. The average age of the region's truck fleet between 2015 and 2020 was around 15.6 years (3.9 years older than in the European Union), impacting emissions from the sector.

- The share of rail in the region's freight transport was relatively low, with Brazil and Colombia having the highest levels (27% each for 2017 data). The use of intermodal freight transport in the region remains limited.

- The average motorisation rate (covering four-wheeled motor vehicles) in Latin America and the Caribbean increased to 282 vehicles per 1,000 people in 2016-2022, or 1.3 times higher than the global average of 219 vehicles per 1,000 people. Nearly half of all countries in the region had motorisation rates above the global average during this period. In major cities, rising motorisation has worsened congestion, leading to higher fuel consumption and increased greenhouse gas and pollutant emissions.

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- Sales of new light- and heavy-duty vehicles (not including motorised two- and three-wheelers) increased nearly 1.6% on average in 2024, based on data from nine different automotive associations and chambers in the region.

- E-commerce market transactions in Latin America and the Caribbean increased 39% in 2022 and 20% in 2023, reaching USD 509 billion. The growth in online shopping has driven up demand for "last-mile" deliveries, particularly by motorcycles and vans, and altered trip patterns in urban areas, placing a burden on urban transport systems.

- Motorcycle sales in the region grew 51% between 2012 and 2023, rising from 3.7 million to 5.6 million. Factors include the relatively low acquisition and maintenance costs of motorcycles compared to cars, the limited availability of public transport in some places, rising traffic congestion and the growing prevalence of gig economy jobs related to food and goods delivery.

- Sales of battery electric cars in Latin America and the Caribbean nearly doubled between 2022 and 2023 (from around 22,400 units to 39,000 units) and reached 118,000 units in 2024, with leading markets in Brazil, Colombia, Costa Rica and Mexico. Electric cars represented 4% of total new car sales in the region in 2024, although the market is still considered emerging.

- Despite informal transport's significant contribution in the region, it has received limited attention in countries' decarbonisation strategies, and its electrification remains at an early stage. In 2024, sales shares of electric motorised two- and three-wheelers, trucks and vans were around 0.3% or less each.

- The number of electric public buses in the region grew nearly 75% between 2022 and February 2025, surpassing 6,500 units operating in 67 cities across 12 countries. Nearly 92% of the region's electric public buses are in Brazil, Chile, Colombia and Mexico. The share of electric public buses in the regional public transport fleet increased from 4.7% in 2023 to roughly 7.5% in 2025.

- The region plays a strategic role in the supply of materials for the energy transition and transport electrification; it is a global leader in the production of copper, lithium, and nickel, critical inputs for electric vehicle batteries and renewable energy technologies.

- Besides a strong presence of biofuels, the region is well positioned for electrification: Latin America and the Caribbean had the cleanest electricity grid among all regions in 2023 – at 272 grams of CO_2 equivalent per kilowatt-hour (kWh), while the global average was 417 grams of CO_2 equivalent per kWh.

KEY FINDINGS

Sustainability and climate trends

- Transport greenhouse gas emissions in Latin America and the Caribbean fell 1.5% between 2019 and 2022, reflecting a decline related to the COVID-19 pandemic, but by 2023 they were already 1.1% above 2019 levels. Transport is now among the top two emitting sectors in most of the region's countries, as the relative contribution of transport to national emissions has grown.
- The transport sector accounted for 18% of the region's total regional greenhouse gas emissions in 2023.
- Under a "business as usual" scenario, the region's transport CO_2 emissions are projected to increase 17% by 2050 compared to 2019 levels.
- The average per capita transport greenhouse gas emissions in the region totalled 0.94 tonnes of CO_2 equivalent in 2023, slightly above the global average of 0.89 tonnes.
- Transport greenhouse gas emissions relative to economic output in Latin America and the Caribbean, at 1.1 tonnes of CO_2 equivalent per USD 10,000 in 2023, were second-highest among all world regions after Africa (1.29 tonnes), and above the global average of 0.78 tonnes of CO_2 equivalent per USD 10,000.
- Freight transport accounted for 44% of regional greenhouse gas emissions in 2019, mainly due to road freight. Maritime freight contributed 6% of transport emissions, rail 1% and air 3%. Freight vehicles were responsible for 40% of the region's urban CO_2 emissions in 2022 and contributed to congestion and severe road crashes, even though they accounted for only one-quarter of all urban vehicles in the region in 2022.
- Overall, the region's transition to low-emission freight transport has been slow. Some countries have implemented energy efficiency schemes and pilot programmes for the electrification of urban logistics.
- In 2019, excessive exposure to particulate matter caused by transport contributed to nearly 180,000 deaths, or 6% of total deaths, in Latin America and the Caribbean, similar to the global level of 6.1%. Only 7.8% of cities in Latin America and the Caribbean met the World Health Organization's air quality guidelines in 2024.


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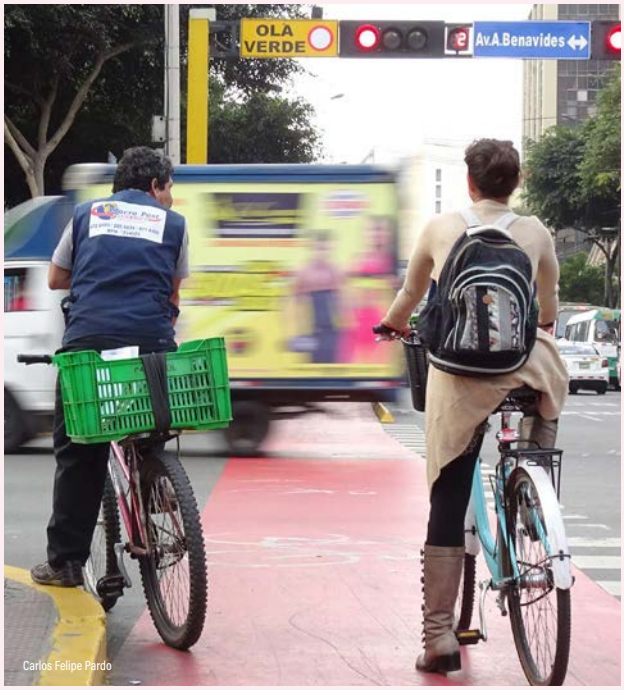
- In 2021, road traffic deaths in the region averaged 14.6 casualties per 100,000 people, close to the global average of 15 casualties per 100,000 people. By country, they ranged from 5.1 casualties in Trinidad and Tobago to 31.3 casualties in Haiti.
- The region faces persistent road safety challenges, including disproportionately high rates of fatal road incidents, with pedestrians and cyclists accounting for nearly half of all road traffic deaths in some countries in 2021. In the region, less than 40% of the assessed roads met the recommended three-star safety standard for bicyclists and motorcyclists, and less than 20% did so for pedestrians, indicating large infrastructure gaps.
- As of 2024, Latin America and the Caribbean was the third most vulnerable region to extreme weather events, after Africa and Asia. In 2022 and 2023, record droughts near the Panama Canal created bottlenecks and reduced the canal's transit capacity 50% in the second half of 2023, impacting global maritime trade.

KEY FINDINGS

Policy and investment developments

- Several countries in Latin American and the Caribbean have developed policy frameworks to enhance low-emission transport initiatives, sustainable transport infrastructure, and climate-resilient urban mobility, reflecting an ongoing commitment to green and inclusive transport solutions. However, the region's transport systems and infrastructure networks remain underprepared for the extreme weather events exacerbated by climate change.
- Although some countries have taken systemic action, the region continues to lag in public policy and action across all transport modes. Key barriers include limited resources, technological gaps and transport system characteristics.
- As of 25 May 2025, five countries in the region – Brazil, Cuba, Ecuador, Saint Lucia and Uruguay – had submitted to the United Nations their third-generation Nationally Determined Contributions (NDCs) towards reducing greenhouse gas emissions under the Paris Agreement.
- Several countries in the region have joined international frameworks for zero-emission transport.
- As of 25 May 2025, 16 countries in Latin America and the Caribbean had submitted National Adaptation Plans (NAPs) to the United Nations, out of a total of 63 NAPs submitted by low- and middle-income countries. Through NAPs, countries outline activities for enhanced infrastructure resilience and transport system adaptation.
- Cities across the region increased their adoption of local sustainable urban mobility plans (SUMPs), highlighting the role of cities as climate action leaders.
- Fossil fuel subsidies in Latin America and the Caribbean continued to incentivise fossil fuel use, contributing to high greenhouse gas emission levels. In 2023, the region's per capita fossil fuel subsidies totalled USD 486, the second lowest level after Africa (USD 198) and less than half the global average (USD 813). The region's fossil fuel subsidies as a share of total GDP, at 6.8%, were the second highest among global regions in 2023, below Asia's at 12.1%. Fossil fuel subsidies in the region are projected to increase 17% between 2023 and 2030, further undermining climate and sustainability efforts.
- Efforts to improve the efficiency of freight transport have been approached mainly through multi-stakeholder programmes, highlighting a regional shift towards collaborative and inclusive efforts.
- Aligned with a worldwide trend, some cities in the region have initiated parking reforms to reallocate space away from vehicle parking and towards broader needs such as housing, public spaces, and cycling and walking infrastructure.
- Cities continued to expand initiatives and actions to enhance the use of walking and cycling.
- Countries in the region have introduced a range of electric mobility strategies, including laws to promote electric vehicles and charging infrastructure, as well as tariff incentives for imports and taxes. Strategic plans, financial incentives, agreements and regulatory frameworks have helped to accelerate the electrification of road transport.
- The use of electric buses for public transport and other forms of shared transport has grown in the region.
- Since 2022, several cities in the region have expanded or launched bus rapid transit (BRT) systems as part of broader efforts to promote low-emission, high-capacity public transport.
- Countries increased their support for extending existing metro lines, and are planning and developing new cable cars and passenger rail services.



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Context, challenges and opportunities

Latin America and the Caribbean is one of the most urbanised regions in the world, with a majority of its population living in cities in 2023.[2] This rapid urbanisation presents both challenges and opportunities for building sustainable, inclusive transport systems. At the same time, the transport sector remains a significant contributor to regional greenhouse gas emissions, with road transport alone accounting for 92% of the fuel combustion-related carbon dioxide (CO_2) emissions from transport.[3]

Structural and policy challenges persist in the region. In 2023, fossil fuel subsidies represented 6.8% of gross domestic product (GDP) across the region.[4] Informal transport services continue to serve a large share of trips in many cities but are frequently overlooked in national strategies.[5]

Despite these obstacles, Latin America and the Caribbean is undergoing a slow but steady shift towards zero-emission transport. Electric vehicle sales more than quadrupled between 2022 and 2024 as battery electric cars rose from around 22,400 units to 118,000 units, with Brazil, Colombia, Costa Rica and Mexico leading this trend.[6] Electrification of public transport has shown strong momentum, with electric bus fleets growing 75% between 2022 and 2025, surpassing 6,500 units operating in 67 cities in 12 countries and likely representing over 7% of the total public bus fleet.[7]

Public transport is the most commonly used mode in many major cities across Latin America and the Caribbean. While some cities operate rail and aerial cable car systems, most trips are made using traditional buses or bus rapid transit (BRT) systems, which still primarily rely on fossil fuels. Electric buses currently make up only a small share of public transport fleets.

Walking plays an important role in urban mobility in the cities surveyed, often serving as a connection to both public and informal transport. Although bicycle use is increasing in some cities, its overall modal share remains low, and only a few cities have developed extensive cycling infrastructure.

Latin America and the Caribbean plays a strategic global role in both the energy transition and transport electrification. Argentina, Brazil, Chile and Peru are major producers of copper, nickel, and lithium, which are critical material inputs for electric vehicle batteries and renewable energy technologies.[8] These material sources, if harnessed using sustainable practices and industrial policies, could create regional value chains in battery production and electric vehicle assembly.

As of 25 May 2025, only five countries in the region (Brazil, Cuba, Ecuador, Saint Lucia and Uruguay) had submitted to the United Nations their third-generation Nationally Determined Contributions towards reducing greenhouse gas emissions under the Paris Agreement, enhancing climate action to 2035.[9]

Freight activities in the region are dominated by road transport, which accounted for 86% of all freight activity and 80% of freight-related CO_2 emissions in the region in 2019.[10] The existing truck fleet is ageing and has low capacity, resulting in emissions, pollution and health impacts. Progress on freight decarbonisation and intermodal transport has been limited, although some pilot programmes have advanced in Chile, Colombia and Mexico.[11]

Looking ahead, regional co-operation, investment in climate-resilient infrastructure and the scaling of successful pilot programmes will be crucial. With the 2025 United Nations Climate Change Conference (COP 30) to be hosted in Bélem, Brazil, the region has an opportunity to reaffirm its commitment to sustainable, low-carbon transport and to demonstrate leadership.

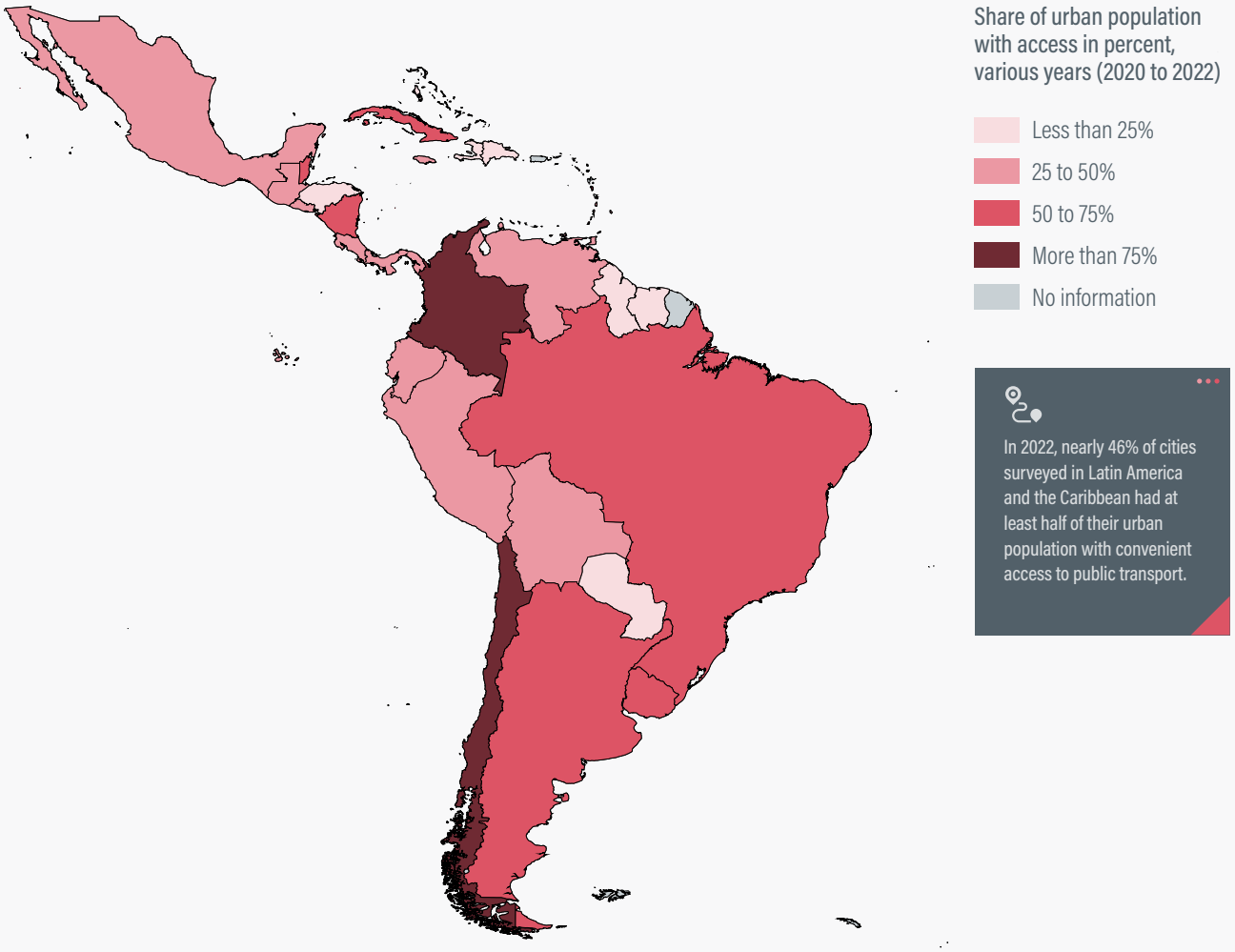
Demand, use and access

Latin America and the Caribbean is one of the most urbanised regions in the world, with 85% of its population living in cities in 2023.[12] Enhancing transport while limiting negative impacts such as traffic congestion, road crashes and environmental pollution is key to ensuring safe, equitable and sustainable access to opportunities for both city dwellers and rural inhabitants in the region.[13]

In Latin America and the Caribbean, around 42% of the urban population on average across countries had convenient access to public transport in 2020-2022.[14] This was the third lowest regional value after Africa (33%) and Oceania (41%), and below the global average of 52%.[15] In nearly 46% of assessed cities in the region (130 out of 285), half or more of the population had convenient access to public transport during 2020-2022 (Figure 1).[16]

Although public transport has a higher market share than private transport in most of the region's cities, private motorisation (particularly motorcycles) is increasing due to factors such as service coverage, accessibility, subsidy levels and personal safety.[17] Regional rural areas and urban peripheries tend to have lower coverage of transport services, and the higher prevalence of unpaved infrastructure in these areas increases their vulnerability to climate-related impacts. Communities that depend on only a few existing public transport routes to access employment opportunities, goods and services are more vulnerable to disruptions that can prevent them from meeting their basic needs.[18]

FIGURE 1. Share of urban population with convenient access to public transport in Latin America and the Caribbean, various years (2020 to 2022)



Source: See endnote 16 for this section.

- Despite an overall decline in public transport ridership, nearly 80% of inter-city trips in Colombia are taken by passenger bus.[19]

Public transport remains the primary mode of mobility for women across much of Latin America and the Caribbean, due to lower rates of vehicle ownership and the nature of their trips, which often involve multiple purposes and off-peak travel. However, most transport systems in the region are not designed with women's safety, comfort or caregiving responsibilities in mind, resulting in accessibility gaps and exposure to harassment.[20]

According to UNDP's 2025 report, recent mobility surveys in selected Latin American cities show that public transport and walking are the most common modes of travel: in Quito, 58% of trips are by public transport and 15% on foot; in Buenos Aires, 38% and 25% respectively; in Mexico City, 43% and 34%; and in Bogotá, 26% and 36%. Bicycle use remains relatively low, ranging from 1% in Mexico City to 6.3% in Bogotá.[21]

In Latin America and the Caribbean, investments in pedestrian infrastructure have remained low, pointing to a key opportunity for inclusive, low-carbon transport planning.[22] Walking remains a critical mode of transport in this region, despite poor pedestrian environments that lack safety or shade.[23]

- In Bogotá (Colombia), the shared bicycle system celebrated two years of operation as of September

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2024 and comprised 3,300 bikes distributed across 300 stations.[24] In 2024, the system facilitated 3 million trips and served 130,000 users, and in its first year of operation it helped reduce 205 tonnes of CO_2 emissions.[25]

- Mexico City (Mexico) had more than 500 kilometres of bike lanes and a bike share system with 10 stations as of 2024, and aimed to add 40 kilometres of lanes and 7 stations in 2025.[26]
- As of 2025, the "Mi Bici Tu Bici" bicycle programme in Rosario (Argentina) had more than 139,000 registered users, 758 bicycles and 89 stations spread across all city districts.[27] In 2024, the subscription system was modernised to enable payment by credit or debit card, digital wallet or cash.[28]
- In Brazil's cycling retail sector (one of the region's largest), sales fell 34.3% on average in 2023 but showed signs of recovery in 2024 as nearly half of retailers reported improved sales, supported by growing demand for higher-value bicycles, greater product diversification and rising use of e-commerce platforms.[29]

Passenger mass transport systems continued to expand as countries invest in extending existing metro lines and planning and developing new cable cars and urban rail.[30] The expansion and modernisation of bus systems remained the dominant trend in public transport, although interest in extending passenger rail services has grown.

- After more than eight decades of discussions, the metro system in Bogotá (Colombia) is becoming a reality, achieving 50% completion as of March 2025.[31] The system will span 23.9 kilometres, include 16 stations, and have a capacity of 1,800 passengers, and is expected to be operational by 2028.[32]
- In Quito (Ecuador), the city's first metro system began operating in December 2023 with 22.5 kilometres and 15 stations.[33]
- In February 2025, Buenos Aires (Argentina) announced its first metro expansion in 25 years, with plans to build Line F with 11 new stations along 9 kilometres, which will cross-cut existing radial lines to improve system integration and reduce travel time by 40%.[34] Civil works are scheduled to begin in 2026, with operations expected by 2031.[35]

At least eight Latin American cities have invested in cable car systems to address the accessibility and connectivity challenges faced by hillside communities, which are mostly informal and lack services.[36] While these systems have provided important spatial and social connectivity benefits, they lack the high capacities of bus and metro systems. Their effectiveness depends heavily on their integration with the rest of the public transport network, including co-ordinated fares, seamless transfers and physical connections to bus and metro systems; otherwise, their potential to reduce travel times and improve modal equity is limited.[37] In some contexts, concerns about safety, particularly for women, have underscored the need for targeted measures to prevent harassment and improve passenger security.[38]

- In La Paz (Bolivia), the passenger cable car system accounted for 14.4% of all public transport trips in 2023, with an average daily capacity of 191,760 passengers.[39]
- The cable car system in Medellín (Colombia) covers nearly 12 kilometres and serves 40,000 daily passengers.[40]
- Mexico City (Mexico) operates three cable car systems. The newest line was inaugurated in 2024 and can transport 70,000 to 80,000 persons per day.[41]
- Panama City (Panama) is evaluating offers to build a 6.6-kilometre cable car to connect the city's peripheries with metro stations.[42]
- Salvador de Bahía (Brazil) is developing its first cable car system to connect the Manoel Dendé community with the city's metro network.[43]

Informal transport services still account for a large share of motorised trips in low- and middle-income countries in Latin America and the Caribbean, including more than half of all trips in some cities.[44] Informal transport services – such as minibuses, moto-taxis and tuk-tuks – improve access to opportunities and mobility and are valued for their responsiveness, flexibility and versatility.[45] Despite these advantages, they often suffer from poor service quality—including overcrowding, unsafe driving, unreliable "fill-and-go" operations, limited accessibility for people with disabilities, and unclear routes.[46]

Although data on the electrification of informal transport remain limited, some cities have launched pilot programmes

for electric minibuses and three-wheelers – notably Bogotá (Colombia), Lima (Peru) and Montego Bay (Jamaica).[47] These efforts aim to reduce emissions from the informal and semi-formal fleets that serve a large share of daily trips, particularly in low-income and peri-urban areas.[48] Research studies, mapping and data collection on these services have continued to grow, despite challenges related to informality. Moving towards a hybrid model with integration, regulation, investment and innovation would transform informal transport services into more efficient, safe and sustainable mobility [49]

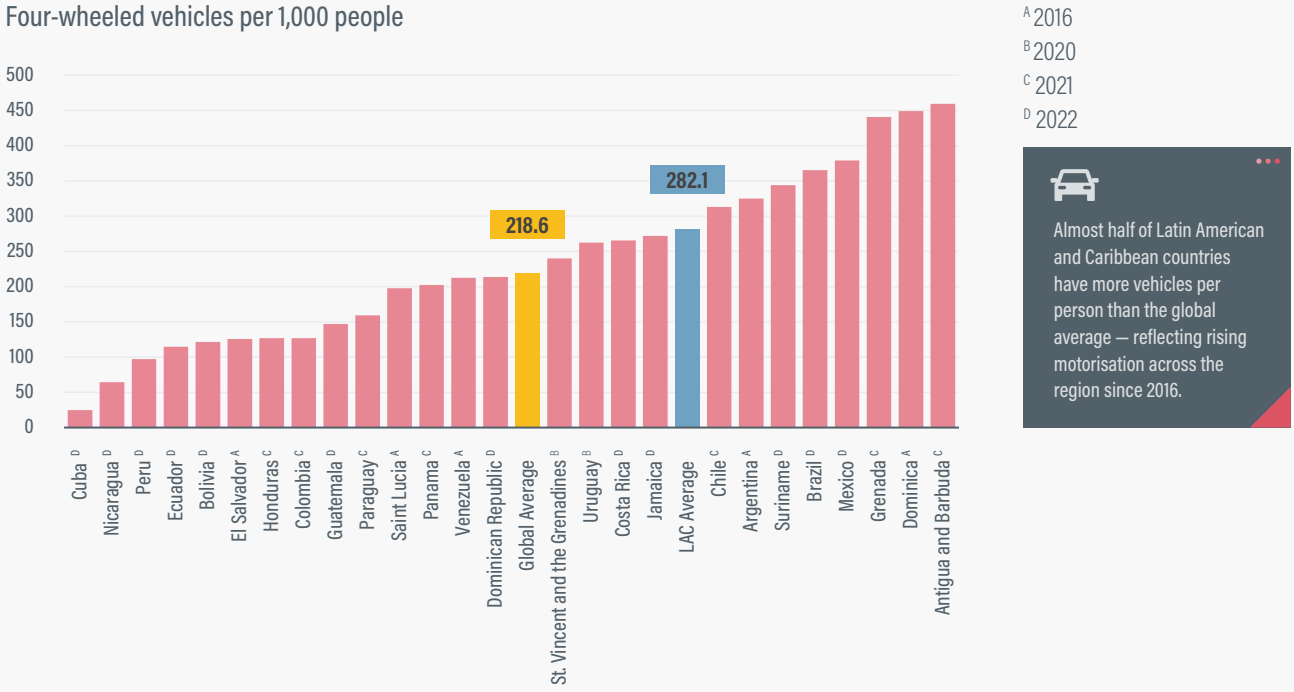
- When informal services were included in the analysis of transport modes, absolute access to public transport increased 54% in the Mexico City Metropolitan Area (Mexico) and 35% in Bogotá (Colombia).[50]
- In San José (Costa Rica), a "Living Lab" case study has been using field research and community engagement to explore the inclusivity, operations and impact of informal transport.[51]

Road transport accounted for as much as 70% of the region's surface freight transport (roads, rail, inland waterways) in 2021.[52] This fleet is mostly low-capacity trucks, which offer lower operational efficiency and generate more emissions than other vehicles.[53] The average age of the region's truck fleet between 2015 and 2020 was around 15.6 years (3.9 years older than in the European Union), impacting emissions from the sector.[54] Ownership of freight vehicles is generally distributed among a variety of small-scale owners, which hinders fleet renewal and affects the sustainability of the sector.[55]

The share of rail in the region's freight transport was relatively low, with Brazil and Colombia having the highest levels (27% each for 2017 data).[56] The use of intermodal freight transport in the region remains limited.[57] However, regarding intermodal transport, Mexico showed the greatest progress in railway construction, while Colombia and Costa Rica have carried out studies to optimise intermodal logistics.[58]

The average motorisation rate (covering four-wheeled motor vehicles) in Latin America and the Caribbean increased to 282 vehicles per 1,000 people in 2016-2022, or 1.3 times higher than the global average of 219 vehicles per 1,000 people (Figure 2).[59] Nearly half of all countries in the region had motorisation rates above the global average during this period.[60] In major cities, rising motorisation has worsened congestion, leading to higher fuel consumption

FIGURE 2. Motorisation rates per 1,000 people in Latin America and the Caribbean, 2016-2022



Source: See endnote 59 for this section.

and increased greenhouse gas and pollutant emissions.[61] The average travel time in the region has continued to rise, with people spending around 17 days per year in traffic congestion, according to 2025 reports.[62]

Sales of new light- and heavy-duty vehicles (not including motorised two- and three-wheelers) increased nearly 1.6% on average in 2024, based on data from nine different automotive associations and chambers in the region.[63] Many countries in the region rely on used vehicle imports, particularly in Central America and the Caribbean. [64]

- In Chile, sales of light- and medium-duty vehicles grew 2.9% in January 2025 compared to a year prior, reaching 25,834 units; this sales recovery started in mid-2024 and was driven by improved economic expectations, lower unemployment and favourable credit conditions.[65]
- Sales of cargo trucks in Chile increased 12.6% to 1,163 units in January 2025, and bus sales surged 65.1%, with 213 units sold, driven mainly by higher sales of minibuses, taxi buses and inter-city buses.[66]
- In Peru, sales and registrations of new light vehicles fell 8.2% in 2024, while sales of two- and three-wheeled motorcycles increased 3.8% and heavy vehicle sales increased 5.3%.[67]
- In Brazil, vehicle registrations grew 14% in 2024.[68] In São Paulo, where congestion costs represent up to 8% of the city's GDP, the rise in private vehicle registrations has outpaced public transport improvements and road capacity expansion.[69]

E-commerce market transactions in Latin America and the Caribbean increased 39% in 2022 and 20% in 2023, reaching USD 509 billion.[70] **The growth in online shopping has driven up demand for "last-mile" deliveries, particularly by motorcycles and vans, and altered trip patterns in urban areas, placing a burden on urban transport systems.** This underscores the need for integrated planning of urban freight, digital platforms and sustainable last-mile solutions. The e-commerce expansion is attributed to shifts in consumer behaviour since the COVID-19 pandemic, particularly with increased digital adoption and the growth of new online platforms.[71]

Motorcycle sales in the region grew 51% between 2012 and 2023, rising from 3.7 million to 5.6 million.[72] **Factors include the relatively low acquisition and maintenance costs of motorcycles compared to cars, the limited availability of public transport in some places, rising traffic congestion and the growing prevalence of gig economy jobs related to food and goods delivery.**[73]

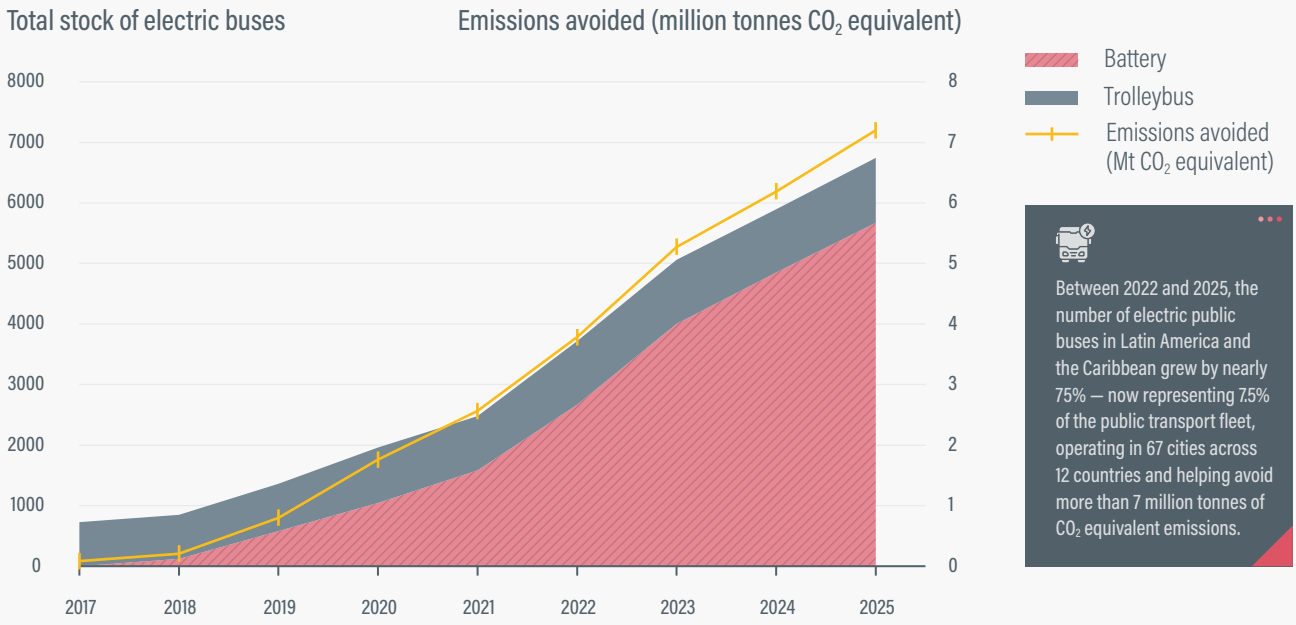
- In Colombia, monthly registrations of new motorcycles increased 45% between March 2024 and March 2025, rising from 58,990 registrations to 85,763.[74]
- In Argentina, the number of new motorcycles registered in the Official National Single Automotive Registry units grew 2.7% in 2024, bringing the total fleet size to more than 7 million vehicles.[75]
- In Brazil, the region's largest motorcycle market, registrations increased 16.1% in 2023, the third consecutive year of strong growth.[76] In 2024, motorcycle sales increased 18.6% to reach 1.9 million units.[77] The rising preference in Brazil for compact, urban-use models – such as city bikes (42.3%) and scooters (33.9%) – reflects a broader shift in mobility, particularly in response to rising congestion, affordability concerns, and the expansion of delivery and ride-hailing services.[78]
- In the Dominican Republic, motorcycle registrations grew 35% between 2022 and 2024, reflecting the increasing reliance on motorcycles as an affordable and flexible transport option, particularly in areas with limited public transport coverage.[79]

Sales of battery electric cars in Latin America and the Caribbean nearly doubled between 2022 and 2023 (from around 22,400 units to 39,000 units) and reached 118,000 units in 2024, with leading markets in Brazil, Colombia, Costa Rica and Mexico.[80] **Electric cars represented 4% of total new car sales in the region in 2024, although the market is still considered emerging.**[81]

- In 2024, the region's electric vehicle stock totalled around 565,000 electric two- and three-wheelers, 215,000 electric cars, 5,600 electric buses and 2,100 electric trucks.[82]
- Brazil led electric vehicle sales in the region in 2024, with more than 62,000 registrations (up nearly three-fold from 2023 and representing 6.4% of total car sales), driven largely by Chinese automakers.[83] However, the country's focus on ethanol-based biofuels has slowed electric vehicle adoption, as biofuels remain a cost-competitive alternative that is supported by existing refuelling infrastructure.[84]
- In 2024, electric car sales neared 11,000 vehicles each in Colombia (7.4% of annual car sales) and Costa Rica (15% of sales), but sales remain limited in other Central and South American countries.[85]

Despite informal transport's significant contribution in the region, it has received limited attention in countries' decarbonisation strategies, and its electrification remains at an early stage.[86] **In 2024, sales shares of electric motorised two- and three-wheelers, trucks and vans were around 0.3% or less each.**[87] In Brazil, the largest market for electric motorcycles, sales grew 15% in 2023, driven by urban adoption and the expansion of delivery services, but then fell 6.7% in 2024, indicating shifting market conditions.[88]

FIGURE 3. Total electric buses in Latin America and the Caribbean, 2017-2025



Source: See endnote 89 for this section.

The number of electric public buses in the region grew nearly 75% between 2022 and February 2025 (Figure 3)**, surpassing 6,500 units operating in 67 cities across 12 countries.**[89] **Nearly 92% of the region's electric public buses are in Brazil, Chile, Colombia and Mexico.**[90] **The share of electric public buses in the regional public transport fleet increased from 4.7% in 2023 to roughly 7.5% in 2025.**[91] The cumulative avoided emissions over the entire lifespan of the electric buses totalled an estimated 7.2 million tonnes of CO_2 equivalent from 2017 to 2025.[92]

- In Brazil, the market for electric public buses remains relatively small but has expanded rapidly, with registrations growing 145% in 2023 (to 86 units) and a further 213% in 2024 (to 285 units).[93]
- In 2024, Santiago (Chile) had the largest electric bus fleet among cities outside of China, with 2,500 electric buses.[94] An additional 1,800 electric buses are planned to be added by the end of 2025, which would represent 68% of the total fleet operating in the city at that time.[95]
- As of April 2025, the countries with the highest numbers of electric buses in the region were Chile (2,729 units) and Colombia (1,590), followed by Brazil (1,059) and Mexico (835).[96] The leading cities were Santiago (2,550 units), Bogotá (1,486) and São Paulo (789).[97]
- Barbados aims to remove all of its remaining diesel vehicles and to transition its bus fleet to 120 fully electric buses by late 2025.[98]

The region plays a strategic role in the supply of materials for the energy transition and transport electrification; it is a global leader in the production of copper, lithium, and nickel, critical inputs for electric vehicle batteries and renewable energy technologies.[99] Chile and Argentina are among the world's top lithium producers, and Brazil and Peru are key copper exporters.[100] These resources, if managed sustainably, offer the potential to create regional value chains through local battery processing and electric vehicle manufacturing.[101]

Regional initiatives demonstrate that despite promising steps, biofuels have not yet been widely adopted, green hydrogen is still at an early stage, and the electrification of heavy-duty transport is low.

- In Brazil, biofuels (particularly ethanol) account for 21% of transport energy demand and are a central part of national energy policy.[102]
- In 2022, 120 electric semi-trailers manufactured by China's BYD were deployed in Mexico; however, more widespread adoption is constrained by cost, infrastructure and regulatory barriers.[103]

Besides a strong presence of biofuels, the region is well positioned for electrification: Latin America and the Caribbean had the cleanest electricity grid among all regions in 2023 – at 272 grams of CO_2 equivalent per kilowatt-hour (kWh), while the global average was 417 grams of CO_2 equivalent per kWh.[104]

Sustainability and climate trends

Transport greenhouse gas emissions in Latin America and the Caribbean fell 1.5% between 2019 and 2022, reflecting a decline related to the COVID-19 pandemic, but by 2023 they were already 1.1% above 2019 levels.[105] **Transport is now among the top two emitting sectors in most of the region's countries, as the relative contribution of transport to national emissions has grown.**[106] This reflects both rising vehicle activity and slower decarbonisation of the transport sector compared to energy and industry.[107]

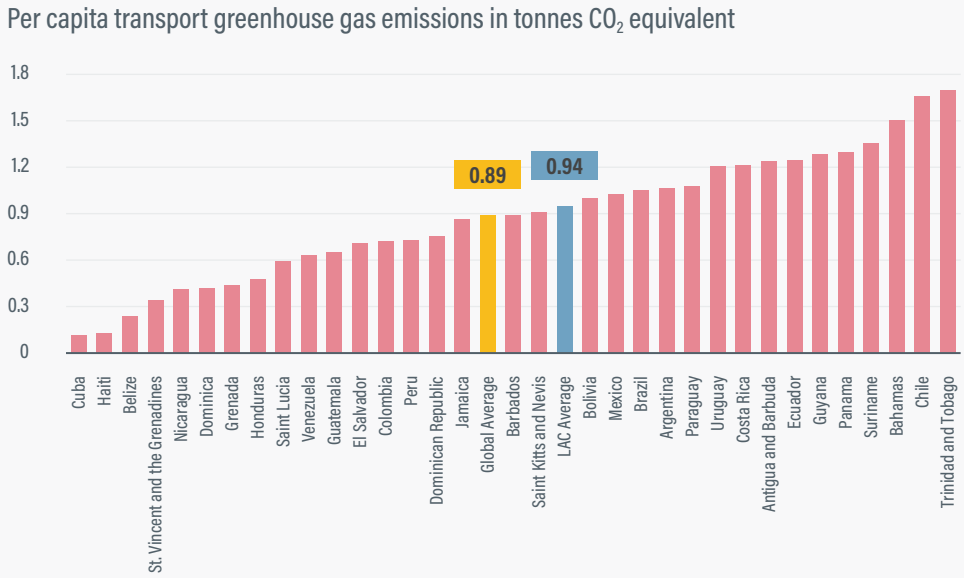
The transport sector accounted for 18% of the region's total regional greenhouse gas emissions in 2023.[108] Road transport contributed the bulk of the transport CO_2 emissions related to fuel combustion, at 92% in 2019, followed distantly by domestic aviation (4%), domestic shipping (2%) and rail transport (1%).[109] Passenger transport contributed 56% of the region's transport CO_2 emissions, of which 46% were from land transport and 9% from air transport in 2019.[110]

Under a "business as usual" scenario, the region's transport CO_2 emissions are projected to increase 17% by 2050 compared to 2019 levels.[111] In this scenario, governments are expected to address decarbonisation only slowly, focusing on incremental measures such as promoting technological advancements to replace internal combustion engine vehicles, managing demand, encouraging modal shifts and investing in alternatives to private vehicles. In contrast, in a high-ambition scenario, governments would adopt more aggressive strategies to decarbonise the sector, such as providing alternatives to private motorised vehicles, enhancing public transport systems, promoting walking and cycling, improving transport efficiency and transforming freight transport.[112]

The average per capita transport greenhouse gas emissions in the region totalled 0.94 tonnes of CO_2 equivalent in 2023, slightly above the global average of 0.89 tonnes.[113] The highest emitting countries were Trinidad and Tobago and Chile (close to 1.7 tonnes each), and the lowest were Haiti, Cuba and Belize (below 0.25 tonnes each) (Figure 4).[114]

Transport greenhouse gas emissions relative to economic output in Latin America and the Caribbean, at 1.1 tonnes of CO_2 equivalent per USD 10,000 in 2023, were second-highest among all world regions after Africa (1.29 tonnes), and above the global average of 0.78 tonnes of CO_2 equivalent per USD 10,000.[115]

FIGURE 4. Per capita transport greenhouse gas emissions in Latin America and the Caribbean, 2023



In 2023, per capita transport emissions in Latin America and the Caribbean matched the global average — but national levels ranged widely, from just 0.1 tonnes in Cuba and Haiti to nearly 1.7 tonnes in Chile and Trinidad and Tobago.

Source: See endnote 114 for this section.

Freight transport accounted for 44% of regional greenhouse gas emissions in 2019, mainly due to road freight. [116] **Maritime freight contributed 6% of transport emissions, rail 1% and air 3%.**[117] **Freight vehicles were responsible for 40% of the region's urban CO_2 emissions in 2022 and contributed to congestion and severe road crashes, even though they accounted for only one-quarter of all urban vehicles in the region in 2022.**[118]

Overall, the region's transition to low-emission freight transport has been slow. Some countries have implemented energy efficiency schemes and pilot programmes for the electrification of urban logistics.[119]

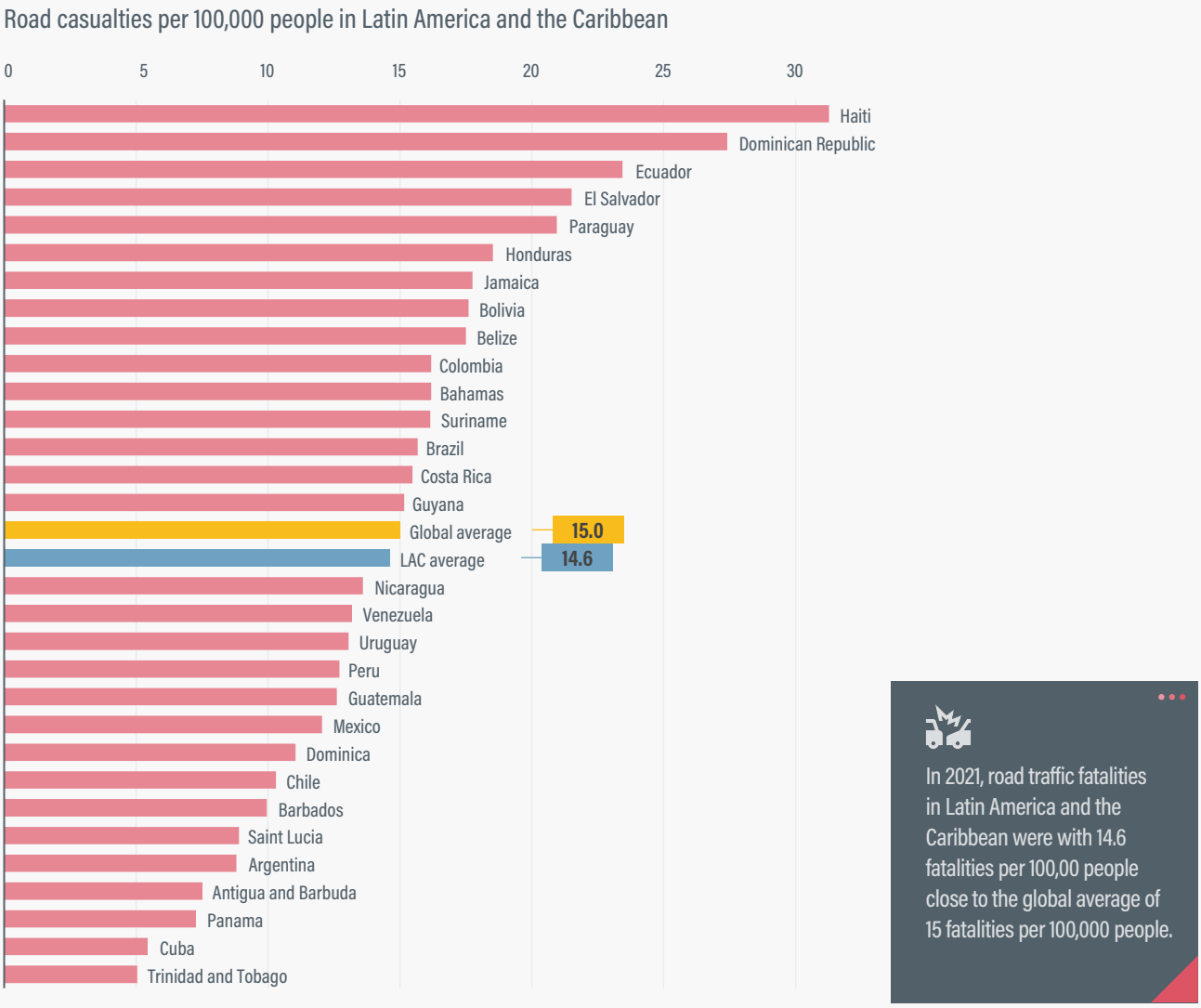
- In 2021, Chile became the first country in the region to have an efficiency law in place for all road vehicle segments.[120] As of 2024, more than 300 companies and 8,000 vehicles were enrolled in Chile's Giro Limpio ("Clean Route") programme, which certifies freight operators based on their fuel efficiency performance and adoption of cleaner technologies, leading to fuel and emissions savings.[121]
- Colombia had upgraded 28,000 heavy goods vehicles to Euro 6 standards as of 2025.[122]
- In 2025, Brazil's Phase L7 of the national Proconve programme came into effect. It sets more stringent emission limits for new light-duty vehicles and requires manufacturers to adopt advanced technologies to meet progressive targets, as part of broader efforts to improve air quality and align with global environmental standards.[123]

In most cases, fossil fuel prices in the region are directly fixed by governments or are regulated in ways that are not fully aligned with market price fluctuations. Countries have introduced a variety of price mechanisms including liberalised prices, fully flexible prices, flexible prices with some degree of smoothing, ad hoc prices and fixed prices.[124]

- As of April 2025, the region's lowest petrol and diesel prices were in Venezuela, Bolivia and Ecuador (ranging from USD 0.004 to USD 0.706 per litre), whereas the highest petrol prices were in Barbados, Uruguay, Belize and Bahamas (ranging from USD 1.43 to USD 1.93 per litre).[125]
- In Peru, the government programme Ahorro GNV facilitated the conversion of 73% of the country's light-duty vehicles from diesel to compressed natural gas in 2022, saving consumers around 50% per month and providing access to a cleaner, more economical and stable fuel.[126]
- Since October 2023, a Peruvian decree has mandated that international land transport vehicles entering its territory must comply with regulations on fuel quality, impacting neighbouring Bolivia.[127]

In 2019, excessive exposure to particulate matter caused by transport contributed to nearly 180,000 deaths, or 6.1% of total deaths, in Latin America and the Caribbean, similar to the global level of 6%.[128] **Only 7.8% of cities in Latin America and the Caribbean met the World Health Organization's air quality guidelines in 2024**; these recommend that annual average concentrations of particulate matter 2.5 should not

FIGURE 5. Road casualties per 100,000 people in Latin America and the Caribbean, 2021



Source: See endnote 131 for this section.

exceed 5 micrograms per cubic metre.[129]

In 2021, road traffic deaths in the region averaged 14.6 casualties per 100,000 people, close to the global average of 15 casualties per 100,000 people.[130] By country, they ranged from 5.1 casualties in Trinidad and Tobago to 31.3 casualties in Haiti (Figure 5).[131]

The region faces persistent road safety challenges, including disproportionately high rates of fatal road incidents, with pedestrians and cyclists accounting for nearly half of all road traffic deaths in some countries in 2021.[132] In the region, less than 40% of the assessed roads met the recommended three-star safety standard for bicyclists and motorcyclists, and less than 20% did so for pedestrians, indicating large infrastructure gaps.[133]

As of 2024, Latin America and the Caribbean was the third most vulnerable region to extreme weather events, after Africa and Asia.[134] In 2022 and 2023, record droughts near the Panama Canal created bottlenecks and reduced the canal's transit capacity 50% in the second half of 2023, impacting global maritime trade.[135]

Policy and investment developments

Several countries in Latin American and the Caribbean have developed policy frameworks to enhance low-emission transport initiatives, sustainable transport infrastructure, and climate-resilient urban mobility, reflecting an ongoing commitment to green and inclusive transport solutions. However, the region's transport systems and infrastructure networks remain underprepared for the extreme weather events exacerbated by climate change, with disruptions to roads, ports, airports and public transport affecting markets and industries such as tourism.[136]

- In 2024, Belize submitted to the United Nations its First Biennial Transparency Report on emissions, which provides updates on the national emissions inventory, progress towards achieving the country's Nationally Determined Contribution (NDC), policies, climate impacts, and support provided and received.[137] Belize's second-generation NDC submission of 2021 included mitigation and adaptation targets related to transport.[138]
- To better connect the country, Colombia has made efforts to reactivate the railway system, concession airports, build new roads, strengthen ports, and promote the energy transition and social transformation.[139]
- Ecuador's National Sustainable Mobility Policy, presented in 2023, established strategies and actions for cities to enhance sustainable urban mobility.[140]
- After Mexico adopted the 2020 General Law of Mobility and Road Safety, Jalisco became one of the first states to invest in transport transformation, identifying the need to build streets that prioritise safe access for pedestrians and public transport.[141]
- In 2024, Mexico adopted the National Public Collective Urban Transport Policy (PNTPCU), which aims to promote cleaner alternatives, reduce environmental impact, decrease car dependence, and improve accessibility, sustainability, safety and governance.[142] The goal is to enhance public transport infrastructure and services, reduce inequality and combat climate change while fostering strategic planning for long-term urban mobility improvements.[143]
- In March 2025, Uruguay enacted the regulatory framework for its National Sustainable Urban Mobility Policy, which includes reforms to subsidies, taxes and other incentives to align the tax system with sustainable mobility objectives, and also aims to advance regulations on energy efficiency and the safety of electric vehicles.[144]

Although some countries have taken systemic action, the region continues to lag in public policy and action across all transport modes. Key barriers include limited resources, technological gaps and transport system characteristics.[145]

In Brazil, the government's Mover programme (Mobility and Innovation for the Automotive Sector), launched in 2023, aims to accelerate the transition to low-emission vehicles and to improve the sustainability of domestic manufacturing.[146] The programme adopts a well-to-wheel emission approach and introduces tax incentives, promoting innovation in areas such as energy efficiency, advanced propulsion, biofuels and vehicle recyclability.[147] The programme fosters collaboration among industry, start-ups, and research institutions, with a goal to advance Brazil's progress in long-term decarbonisation and competitiveness.[148]

As of 25 May 2025, five countries in the region – Brazil, Cuba, Ecuador, Saint Lucia and Uruguay – had submitted to the United Nations their third-generation Nationally Determined Contributions (NDCs) towards reducing greenhouse gas emissions under the Paris Agreement.[149] Among these, Saint Lucia is the only country with a mitigation target specifically for transport, while Brazil and Cuba both have non-greenhouse gas transport targets.[150]

- Brazil's 2024 NDC features a target to obtain 50% of transport energy from biofuels by 2033.[151]
- Cuba's 2025 NDC aims for electric vehicles to comprise 10% of the total vehicle fleet by 2030 and 15% by 2035.[152]
- Saint Lucia's NDC commits to a 22% reduction in greenhouse gas emissions from transport and energy by 2035, compared to 2010 levels.[153]

Several countries in the region have joined international frameworks for zero-emission transport.

- At COP 28 in 2023, Colombia signed the Global Memorandum of Understanding (Global MOU) on Zero-Emission Medium- and Heavy-Duty Vehicles, committing to achieve 100% zero-emission new truck and bus sales by 2040.[154]
- In 2024, Costa Rica endorsed the Zero-Emission Vehicle (ZEV) Declaration under the Accelerating to Zero (A2Z) Coalition, reinforcing its ambition to align transport decarbonisation with the goals of its National Decarbonization Plan 2050.[155]

As of 25 May 2025, 16 countries in Latin America and the Caribbean had submitted National Adaptation Plans (NAPs) to the United Nations, out of a total of 63 NAPs submitted by low- and middle-income countries.[156] **Through NAPs, countries outline activities for enhanced infrastructure resilience and transport system adaptation.** Countries in the region that submitted NAPs during 2023 and 2024 were Argentina, Ecuador, Haiti, Trinidad and Tobago, and Uruguay.

- Argentina's 2023 NAP aims to adapt transport infrastructure and operations to climate change by

developing sustainable urban transport, strengthening railways and waterways, and working towards more efficient transport energy use and replacement of fossil fuels with renewable energy.[157]

- In its 2023 NAP, Haiti seeks to enhance infrastructure resilience through better construction standards, zoning, risk and disaster management, maintenance and improved urban planning.[158]
- Uruguay has released several specialised NAPs, with focus areas including cities and infrastructure (2021), agriculture (2021), coastal adaptation (2021) and energy (2024).[159]

Cities across the region increased their adoption of local sustainable urban mobility plans (SUMPs), highlighting the role of cities as climate action leaders. Cities that completed SUMPs through the MobiliseYourCity Partnership between 2022 and 2025 included Arequipa (Peru) and Baixada Santista (Brazil).[160] SUMPs are expected to be completed in the coming years in Córdoba (Argentina), La Paz (Bolivia), Puebla (Mexico), and cities in Paraguay and Uruguay.[161]

- Buenos Aires (Argentina) released its Sustainable Mobility Plan (Plan de Movilidad Sustentable 2030) in 2023, based on a vision for accessible, sustainable, safe and individual transport.[162]
- Córdoba (Argentina) finalised its SUMP in 2023, although information on the implementation of actions remains limited, indicating that the execution phase may still be developing.[163]
- The Brazil National Urban Mobility Policy (PNMU), most recently amended in December 2023, mandates that all municipalities with over 20,000 inhabitants—as well as those located in metropolitan regions, designated as tourist destinations or seeking federal funding for urban mobility—prepare a Mobility Plan. Although most of these cities have not yet submitted their plans, several have finalised theirs in the past two years.[164] Brazilian municipalities often face barriers such as limited technical capacity, institutional support and financial resources, highlighting the urgent need for public policies that offer both technical and financial assistance to enable equitable mobility planning across the country.[165]
- After Costa Rica adopted its Pedestrian Mobility Law in 2021, 15 local governments developed an Intermunicipal Urban Development Plan Oriented to Transport, which aims to shift the paradigm away from car-centred mobility to improve the quality of life for urban residents and visitors.[166]
- In 2024, Peru published its Manual for the Development of Sustainable Urban Mobility Plans, with the objective of guiding and promoting the development of SUMPs in cities across the country.[167]

Fossil fuel subsidies in Latin America and the Caribbean continued to incentivise fossil fuel use, contributing to high greenhouse gas emission levels. In 2023, the region's per capita fossil fuel subsidies totalled USD 486, the second lowest level after Africa (USD 198) and less than half the global average (USD 813).[168] The region's fossil fuel subsidies as a share of total GDP, at 6.8%, were the second highest among global regions in 2023, below Asia's at 12.1%.[169] Fossil fuel subsidies in the region are projected to increase 17% between 2023 and 2030, further undermining climate and sustainability efforts.[170] Although removing fossil fuel subsidies supports the decarbonisation of transport, such subsidies remain politically difficult to reform and are deeply entrenched in most countries of the region.[171]

- Between 2018 and 2022, Brazilian subsidies to the oil and gas industry totalled USD 58 billion (BRL 335 billion), five times higher than those for renewable energy despite an increase in subsidies for renewables, which are a dominant energy source.[172] In 2023, the government reduced consumer subsidies for fossil fuels but increased financial support for the extraction and development of new reserves; this sparked protests against the environmental consequences of these investments, particularly oil exploration in the Amazon.[173]
- In Ecuador, following protests in 2023 and reductions in subsidies in 2024, the consumption of gas oil decreased; however, diesel and petrol consumption by taxis increased.[174]

Efforts to improve the efficiency of freight transport have been approached mainly through multi-stakeholder programmes, highlighting a regional shift towards collaborative and inclusive efforts.

- In Argentina, the government's Plataforma Observatorio Nacional de Transporte Sostenible (PONTS), launched in 2024, supports the decarbonisation of the transport sector, including freight transport, by promoting efficiency, competitiveness, and implementing activities that will support the Argentine government in implementing measures that are part of the National Climate Change Adaptation and Mitigation Plan (PNAyMCC).[175]
- In 2023, Brazil launched the Green Mobility and Innovation Program, offering companies tax incentives to develop and manufacture low-emission road transport vehicles.[176]
- As of December 2023, the Chilean voluntary programme Giro Limpio – which seeks to certify and recognise efforts by transport companies to improve their energy and environmental performance – had expanded to 376 transport companies, 56 freight generators and 11 logistics operators.[177] Next steps include a methodology for quantifying energy savings and emissions associated with the land freight transport sector; a practical guide on

electro-mobility and charging infrastructure for heavy-duty vehicles; and promoting women's participation.[178]

- Through its GiroZero programme, Colombia reduced its CO_2 emissions from freight transport from more than 6.6 million tonnes in 2019 to just over 6.2 million tonnes in 2023.[179] The programme provides tools, research and testing; publishes public policy recommendations; and supports companies in reducing their environmental footprints.[180]
- In 2024, Mexico's Programa Transporte Limpio – a voluntary programme that engages 851 participating cargo transport companies – evaluated 97,800 vehicles and prevented the release of an estimated 3.2 million tonnes of CO_2 emissions.[181]

Aligned with a worldwide trend, some cities in the region have initiated parking reforms to reallocate space away from vehicle parking and towards broader needs such as housing, public spaces, and cycling and walking infrastructure.

- After realising that 42% of the built area in Rio de Janeiro (Brazil) from 2006 to 2015 was dedicated to vehicles, the city changed its building code in 2019 to restrict off-street parking and to promote walking and cycling by removing parking minimums, among other measures.[182]
- The government of Guadalajara (Mexico) has prioritised walking, cycling and transit by expanding regulated parking zones in the city centre, including variable pricing structures where parking fees are higher at peak hours. By discouraging long-term parking in high-demand areas, the reform aims to make spaces available for short-term users and to incentivise alternative mobility options.[183]

Cities continued to expand initiatives and actions to enhance the use of walking and cycling.[184]

- In 2024, Buenos Aires (Argentina) was ranked as the sixth best city in the world for cycling.[185] From 2009 to 2023, the share of bicycle trips in the city grew from 0.4% to 7.0%, to total 400,000 trips per day.[186] Buenos Aires has 300 kilometres of bike lanes and began installing bike parking in 2011, with the total number of spaces reaching 5,000 in 2022.[187]
- Every Sunday, the biggest roads in Bogotá (Colombia) are shut to cars and left open to bikes, skates, and feet, attracting an estimated 1,500 million non-motorised users.[188] In February 2023, the system comprised 608 kilometres of bicycle infrastructure.[189] Although the infrastructure has not yet reached the targets set in the 2020-24 Strategic Plan, the number of trips nearly doubled from 2023 to 2024.[190]
- In 2022, Colombia adopted a National Strategy for Active Mobility that aims to encourage cycling and walking as alternative modes of transport, specifically with a gender and differential approach, to address the challenges of climate change and mobility transformation.[191]
- In 2025, the Ecobici bicycle sharing system in Mexico City (Mexico) totalled 9,300 bicycles distributed at 689 stations across six municipalities.[192]

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- In the first half of 2024, Mexico City added nearly 243 kilometres of cycling infrastructure, bringing the total network to 412 kilometres (up 8% from 2023) and benefiting nearly 1.1 million people.[193]
- Since 2013, Mexico City has built mass bike parking facilities, rising from 968 spaces in 2013 to 2,276 spaces across 10 facilities in 2024, and increasing the storage capacity by 135%.[194]
- At the 2023 UN Climate Change Conference (COP 28), Rio de Janeiro (Brazil) became the first Latin American city to join the Breathe Cities initiative.[195] Its goal is to ensure that 6.7 million residents breathe cleaner air by expanding air quality data, raising awareness with communities, and taking targeted steps to drive climate action, such as providing technical assistance to support the development of a low-emission district and upgraded clean public transport.[196]

Countries in the region have introduced a range of electric mobility strategies, including laws to promote electric vehicles and charging infrastructure, as well as tariff incentives for imports and taxes.[197] Strategic plans, financial incentives, agreements and regulatory frameworks have helped to accelerate the electrification of road transport. Many of these measures focus on facilitating the acquisition and operation of electric vehicles, and supporting the installation of charging points to enable this transition. Developing an electric mobility incentive framework is considered crucial for the early-stage deployment of the technology, but countries in the region are at different stages of development.

- In 2025, Rio de Janeiro was the first city in Brazil to open a public electric vehicle charging station, in line with the municipality's Sustainable Development and Climate Action Plan, which aims to make the city neutral in greenhouse gas emissions and targets a 40% share of electric and hybrid vehicles in the fleet by 2050.[198] Rio de Janeiro's regulation 158/25 seeks to guarantee condominium unit owners the right to install electric vehicle charging infrastructure in their private parking lots.[199]
- Chile's 2024-2026 Roadmap for the Advancement of Electromobility outlines actions including deploying public chargers in urban and inter-urban areas, adding 1,000 zero-emission buses, introducing electric buses to wider regions, and providing scholarships for electromobility-related training.[200]
- Costa Rica updated its Law of Incentives and Promotion for Electric Transportation in 2023 to promote the installation and distribution of fast chargers, reducing the gap between the number of electric vehicles and the availability of charging points.[201]
- Guatemala's Electric Mobility Incentives Law, published in 2022, aims to facilitate and promote the import, sale, and use of electric, hybrid, and hydrogen vehicles and electric transport systems.[202] Between January 2024 and January 2025, sales of light electric vehicles in Guatemala increased 113% and sales of electric motorcycles grew 93%.[203]
- After Panama approved its electro-mobility law in 2022, the country's public charging infrastructure expanded, and electric vehicle sales rose from 21 units in 2020 to 359 units by March 2023.[204]
- Asunción (Paraguay) received its first 30 electric public buses in 2023, following the implementation of the Master Plan for Multimodal Electric Mobility for Public and Logistic Transport in 2022.[205]
- In Uruguay, an agreement to allow electric taxis to recharge at 128 electric bus charging points was signed in 2024 between the National Administration of Power Plants and Electric Transmissions (UTE), the Cooperative of Uruguayan Collective Transport of San José (CUTCSA) and the Unified Taxi Guild (CPATU).[206]

The use of electric buses for public transport and other forms of shared transport has grown in the region.

- The electric ferry *China Zorrilla*, which will operate between Argentina and Uruguay, was launched in 2025. It is expected to contribute to the decarbonisation of regional cross-border maritime transport, with an estimated annual reduction of 37,545 tonnes of CO_2 equivalent.[207]
- In 2022, Barbados set an excise tax for electric vehicle purchases, reduced import duties for used electric vehicles to 10%, and lowered the tariff on both electric and solar

battery-powered vehicles by 10%.[208] Barbados has begun replacing its state-owned bus fleet with electric models.[209]

- In Fortaleza (Brazil), the Re-ciclo project uses solar-powered electric tricycles to collect recyclables, promoting environmental sustainability while creating jobs for female recyclers.[210]
- Antofagasta (Chile) runs 40 electric buses, the first such service outside the metropolitan area of Santiago.[211]
- Costa Rica's National Plan for Decarbonization 2050 aims to transition at least 30% of the public transport fleet to zero emissions by 2035 and 85% by 2050.[212] Under this framework, the National Bank of Costa Rica launched the country's first Electromobility Investment Fund in 2025.[213]
- In 2025, Guatemala introduced a 100% electric minibus service aimed at connecting six neighbourhoods to a key shopping centre while integrating with TransMetro and TuBus; the service includes two initial free trips for all users and two free trips per day for seniors.[214]
- Both Jamaica and Trinidad and Tobago have committed to adding electric buses to their fleets.[215]
- Veracruz (Mexico) launched a pilot project of 60 electric taxis in 2025 and plans to modify its regulatory framework to allow electric vehicles to offer taxi services.[216]

Since 2022, several cities in the region have expanded or launched bus rapid transit (BRT) systems as part of broader efforts to promote low-emission, high-capacity public transport.

- Feira de Santana (Brazil) launched a 27-kilometre BRT line in early 2024 along a major urban corridor reducing travel times and increasing access to services for citizens.[217]
- The TransBrasil, a new BRT corridor in Rio de Janeiro (Brazil), partially opened in 2024 with 20 stations along a 26-kilometre route and is expected to expand to 60 kilometres by 2030. The network aims to serve 250,000 people per day and increase employment opportunities for low-income households by 23%.[218]
- Guadalajara (Mexico) inaugurated its Mi Macro Periférico BRT corridor in 2022, operating along a 41.5-kilometre ring road and serving more than 170,000 passengers daily with a fleet of buses.[219]

Countries increased their support for extending existing metro lines, and are planning and developing new cable cars and passenger rail services.

- In October 2024, Belize launched its first public transport commuter app, which will transform the commuting experience for residents and visitors and set a new standard for reliability, safety and efficiency in the country's public transport services.[220]
- Santo Domingo (Dominican Republic) expects to complete the extension of its metro Line 2C by the end of 2026, as part of a metro-teleferic connection in the city.[221]
- In 2024, Mexico approved a reform to Article 28 of the Constitution that prioritises rail passenger transport service and compensates the State for the allocation of public or private concessions, without affecting freight transport.[222] With an initial budget of USD 7,500 million, the government has started work on two of the five planned rail lines.[223]
- Panama aims to install its first cable car system by 2028 and is evaluating proposals for a 6.6 kilometre line with six stations.[224]
- The proposed Transcontinental electric train mega-project, presented in 2024 at the Institute of Mining Engineers of Peru (IIMP), envisions connecting 12 countries across 3,000 kilometres, enhancing connectivity while strengthening regional commerce, logistics and economic development.[225]

In November 2025, Belem (Brazil) will host the annual UN Climate Change Conference (COP 30). Stated priorities include defending multilateralism and science; focusing on action and implementation by translating words into transformative actions on the ground; supporting the implementation of robust NDCs and NAPs; building developing countries' capacity to engage in government-led, systematic and institutionalised national reporting; and designing holistic investment strategies.[226] Other focus areas include the urgency of fulfilling the mandate on indicators, advancing the Baku adaptation roadmap, and establishing a "Circle of Indigenous Leadership" to integrate traditional knowledge into global climate strategies and negotiations.[227] Regional co-operation, investment in climate-resilient infrastructure and the scaling of successful pilot programmes will be crucial. With COP 30, the region has an opportunity to reaffirm its commitment to sustainable, low-carbon transport and demonstrate leadership.

Partnerships in action

SLOCAT partners engaged in dozens of actions during 2023-2024, including:

- **EUROCLIMA**, the European Union's flagship programme for climate action in Latin America, has been restructured along thematic action lines, including urban mobility, energy, resilience and forests. The mobility component extends beyond an earlier focus on NUMPs, SUMPs and pilot projects to support countries through technical assistance, policy support, capacity development and knowledge exchange. The programme is implemented by agencies such as GIZ and AFD and works across multiple levels of government to promote regional co-operation through its communities of practice.[228]

- The **GEF-8**, through its Sustainable Cities Integrated Program, promotes integrated, systems-based strategies to foster net zero carbon, nature-positive, inclusive and climate-resilient urban development.[229] The Greening Transportation Infrastructure Development initiative supports countries in designing transport infrastructure portfolios at the national or land/seascape levels that embed sustainability from the start, while aligning with broader urban transformation goals.[230] As part of GEF-8, countries in Latin America and the Caribbean – including Costa Rica, Guatemala, and Trinidad and Tobago – also receive assistance in preparing their Biennial Transparency Reports for the UN.[231]
- The 2023 report ***Transportation 2050: Pathways to Decarbonization and Climate Resilience in Latin America and the Caribbean*** analyses the state of transport and climate change, identifies country gaps relevant to the sector's transformation, and proposes policy recommendations based on best practices, in order to build an institutional and policy architecture to accelerate the pace of systemic change that the sector needs to comply with international objectives.[232] The report was published by the Inter-American Development Bank (IDB) in collaboration with the Airport Council International, the International Association of Ports and Harbors, the International Road Federation, the International Transport Forum and the International Association of Public Transport (UITP).
- The **MobiliseYourCity Partnership** focuses on comprehensive, integrated and participatory urban mobility planning at the local and national levels by providing methodological guidelines for developing sustainable urban mobility plans (SUMPs) and national urban mobility plans (NUMPs). As of December 2023, the Latin America and Caribbean region had seen the completion of 8 SUMPs and 3 NUMPs, of which 4 SUMPs and 2 NUMPs were in the implementation stage.[233]
- The **International Association of Public Transport (UITP)** aims to promote best practices in public transport and to develop co-operation to provide alternatives for mobility within cities in Latin America and the Caribbean. UITP develops publications, training, debates, meetings and seminars and includes members from Argentina, Bermuda, Bolivia, Brazil, Chile, Colombia, Costa Rica, Ecuador, Mexico, Panama and Uruguay.[234]
- **Asociación Sustentar**, as part of its coordination of the Transport and Resource Efficiency Working Group of the LEDS LAC Platform, delivered a knowledge product that summarises the challenges and opportunities in the region to advance on decarbonisation of the transport sector, with a focus on the electrification of public transport. Based on input from discussions with the High Ambition Group (HAG) for the Energy Transition of Transport and other sources, the analysis evaluated the strategies and action plans that countries are adopting through their NDCs and stakeholders in the region.[235]
- **Despacio** focuses on improving the well-being of communities and individuals by managing slow, human, friendly and sustainable cities.[236] In 2024, Despacio, with support by the C40 Climate Leadership Group, started the "C40 Inclusive e-freight LATAM" project to identify and assess gaps and barriers in access to knowledge, as well as to strengthen the technical and financial skills of the workforce in urban freight transport.[237] The project seeks to enable a just transition towards decarbonising the freight transport sector in cities like Bogotá, Curitiba, Medellín, Mexico City, Quito and Rio de Janeiro.[238]
- In April 2025, at the eighth meeting of the **Forum of the Countries of Latin America and the Caribbean on Sustainable Development** (held by the United Nations Economic Commission for Latin America and the Caribbean), intergovernmental parties recognised that improving environmental quality in cities is necessary to achieve sustainable development and will require efforts in areas such as air, soil, and water pollution, water scarcity, sanitation, sustainable transport, sustainable production and consumption, and energy efficiency.[239]
- **E-Motion** is a regional Green Climate Fund programme supporting the large-scale transition to electro-mobility in Latin America. The first implementation phase includes Paraguay, Panama, and Uruguay, combining financial assistance from CAF with technical support from GIZ.[240]

MODULE 3 | 3.5

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North America Regional Overview

DEMOGRAPHICS, TRANSPORT AND SUSTAINABILITY DATA

Indicators	North America	Global
Population size (2023)	381 million	8,000 million
Population growth (2015-2023)	5.9%	8.5%
Urban population share (2023)	82.2%	57%
Urban population growth (2015-2023)	7.9%	16%
GDP per capita (2023)	USD 61,470 (constant 2015 USD)	USD 11,337 (constant 2015 USD)
GDP growth (2015-2023)	18.7%	22.8%
Share of women employed in transport and storage (2023)	28.1%	15.6%
Motorisation rate (2022)	804.6 vehicles per 1,000 people	218.7 vehicles per 1,000 people
Share of urban population with convenient access to public transport (2020)	66.9%	52%
Share of rural population with access to all-weather primary and secondary roads (2020)	No data	38%
Transport total GHG emissions (2023)	1,905 million tonnes CO_2eq	7,123 million tonnes CO_2eq
Per capita transport GHG emissions (2023)	4.99 tonnes CO_2eq	0.89 tonnes CO_2eq
Fossil fuel subsidies (explicit and implicit) (2023)	USD 2,172 per capita (constant 2021 USD)	USD 813 per capita (constant 2021 USD)
Share of renewable energy sources in transport (2022)	5.8%	4.6% for 2023
Carbon intensity of electricity generation (2023)	279 gCO_2/kWh	417 gCO_2/kWh
Transport contribution to air pollution (2019)	12.6%	6%
Premature deaths attributable to air pollution by transport (2019)	1.7 per 100,000 people	2.3 per 100,000 people
Road casualties (2021)	13.2 per 100,000 people	15 per 100,000 people

Source: See endnote 1 for this section.

Photo: Carlos Felipe Pardo

KEY FINDINGS

Demand, use and access

- Transport is a key pillar of the North American economy. In Canada, the sector directly contributed 4% to the gross domestic product (GDP) in 2023 and employed 844,000 people in 2024. In the United States, transport accounted for 6.5% of GDP in 2023 and employed 6.7 million people as of January 2025.
- Access to sustainable, zero-emission transport, especially public transport and safe walking and cycling, remains limited in the region. In 2020, only 57% of the US urban population had convenient access to public transport – above the global average of 52%, yet below Canada's share of 77%.
- Freight transport by road, pipeline and rail continued to play a significant role in economic activity in North America.
- Across the region, passenger transport activity increased again after the sharp declines experienced during the COVID-19 pandemic in 2020. Passenger transport activity in the United States increased 12% in 2021 but then fell 2% in 2022.


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- Rail passenger transport in the United States grew 19% in 2023 to reach 9,376 million passenger-kilometres; rail ridership was up 104% from the historic low of 4,603 million passenger-kilometres in 2021 but still 10% below the 2019 level (10,440 million passenger-kilometres).
- Four out of five workers in North America commuted primarily by private vehicle in 2022.
- US public transport ridership increased 17% in 2023 – reaching 6.9 billion trips and 56 billion passenger-kilometres – but it still did not recover from pandemic-related declines in 2020 and 2021.
- Walking and cycling play important roles in regional transport but are often overlooked and undercounted.
- Shared micromobility (bicycles and electric scooters) in North America reached a new record high in 2023, with 157 million rides taken in the United States, surpassing the 147 million rides recorded in 2019.
- Although average US petrol prices have fallen from their historic peak in 2022, transport costs place a higher household burden on North America than most regions due to high dependency on private vehicles.
- The region's motorisation levels (covering four-wheeled motor vehicles) remained at an all-time high in 2022, at four times the global average and 15 times higher than in Africa. Canada had a motorisation rate of 654 vehicles per 1,000 people in 2022, while the rate in the United States was even higher at 822 vehicles per 1,000 people.
- Electric passenger car sales in North America continued their near-exponential growth until 2023, then grew modestly in 2024.
- The United States accounted for 11% of global battery electric passenger car sales in 2024, surpassing 1 million units for the first time with 1.1 million new registrations in 2023 and 1.2 million in 2024.
- More electric buses and heavy-duty trucks have entered service in North America, including in both municipal and private fleets.

KEY FINDINGS

Sustainability and climate trends

- In 2023, North America was responsible for 26.7% of global transport greenhouse gas emissions (excluding international aviation and shipping), the second highest regional share after Asia (40.3%).
- Transport emissions in North America increased 0.72% in 2023 – reaching 1.9 gigatonnes of CO_2 equivalent – but were still below 2019 levels.
- Per capita transport emissions totalled 4.3 tonnes of CO_2 equivalent in Canada and 5.1 tonnes in the United States in 2023 – roughly five times higher than the global average of 0.9 tonnes. Key factors behind high per capita emissions are high private motorisation levels and long travel distances.
- In 2023, transport was the largest contributor to US greenhouse gas emissions (accounting for 29% of total emissions) and the second largest contributor to Canadian emissions (22.6%).
- The United States was the world's largest emitter of transport greenhouse gases in 2023, contributing nearly a quarter of the global total (excluding international aviation and shipping), at 1,735 million tonnes of CO_2 equivalent.
- Road transport continued to dominate North American transport greenhouse gas emissions, contributing 81.7% of US transport emissions in 2022 and 62% of Canada's in 2023.
- In Canada, road passenger transport was responsible for 54.4% of transport emissions, road freight transport for 24.3%, and maritime transport for 3%, in 2021 (latest data available).
- In the United States, freight transport was responsible for 31.9% of transport greenhouse gas emissions in 2022, up from only 27% in 2010.
- The average energy efficiency of new light-duty vehicles sold in the United States reached its highest value in 2022, marking the largest improvement in nine years, but it still lagged behind other countries.
- The carbon intensity of electricity has improved steadily in North America in recent years.
- Several North American cities experienced among the highest congestion levels globally in 2024, with motorists in the region's 10 most congested cities facing more than 60 hours of traffic delay annually.
- The transport sector was responsible for around 12.6% of North America's air pollution in 2019, more than double the global average (6%).
- Transport contributed 15% of US air pollutant emissions in 2019 and 9.8% in Canada – resulting in 2.29 premature deaths per 100,000 people in the United States (consistent with the global average) and 1.01 premature deaths in Canada (half the global average).
- North America recorded 13.2 road casualties per 100,000 people in 2021, close to the global average of 15 casualties per 100,000 people.
- Road traffic fatalities and injuries accounted for 1.9% of Canada's GDP and 5% of the US GDP in 2021.
- Less than 40% of the road length assessed in North America meets the recommended three-star or better safety standard for pedestrians and cyclists, compared to 60% for motorcyclists and more than 80% for vehicle occupants.
- The United States has experienced a record number of climate-induced disasters, with 28 events in 2023 costing USD 96 billion in damages and 27 events in 2024 costing USD 182.7 billion.
- Climate change threatens the supply networks of Canada's Indigenous communities, with around 50 communities (56,000 people) relying on a 6,000-kilometre winter road network.

KEY FINDINGS

Policy and investment developments

- Canada continued to advance its 2019 vision calling for "a transport system…that is recognised worldwide as safe and secure, efficient and environmentally responsible", including by integrating the Sustainable Development Goals (SDGs) into nationwide strategies starting in 2023.
- In 2024, Canada announced its 2030 Emissions Reduction Plan, which calls for a 23% reduction in transport greenhouse gas emissions from 186 million tonnes of CO_2 equivalent in 2019 to 143 million tonnes by 2030. Additional government actions explore opportunities for rail, aviation, maritime transport, and other modes, and address zero emission vehicles and fuels, electrification and charging infrastructure.
- In January 2023, the United States released its inter-agency National Blueprint for Transportation Decarbonization, a landmark strategy to drastically reduce transport greenhouse gas emissions towards net zero by 2050.
- The Bipartisan Infrastructure Law of 2021 authorised USD 1.2 trillion for transport and infrastructure investment across the country, including USD 550 billion for new projects between 2022 and 2026.
- The Inflation Reduction Act, signed in August 2022, was the largest investment focused on climate change in US history. Transport-related investments under the Act focused mainly on providing tax incentives to electric vehicle owners as well as auto manufacturers.
- In January 2025, the Trump administration halted the disbursements of funds through the Inflation Reduction Act and the Bipartisan Infrastructure Law through an executive order, which eliminated electric vehicle mandates.
- The United States and Canada have both submitted to the United Nations their third Nationally Determined Contributions (NDCs) towards reducing emissions under the Paris Agreement, which include transport actions. The two countries also released new national adaptation strategies between 2023 and 2025.
- In the United States, policy for clean freight transport advanced with the release of the National Zero-Emission Freight Corridor Strategy in March 2024 and the hosting of the "first-ever White House Sustainable Freight Workshop" in December 2024.
- US land use policy reforms have supported a shift towards integrated transport planning in various jurisdictions.
- In 2023, fossil fuel subsidies in North America totalled USD 2,172 per capita, nearly 3 times the global average (USD 813) and more than 10 times the African average (USD 199). The region's fossil fuel subsidies are projected to rise 17% between 2023 and 2030, further undermining climate and sustainability efforts.
- In January 2025, New York City became the first US city to implement congestion pricing, with each passenger vehicle that enters the "Congestion Relief Zone" facing a daily charge of up to USD 9 at peak times.
- North America has pledged greater investments in infrastructure for walking and cycling.

KEY FINDINGS

- Very few new public transport services were launched in North America between 2022 and 2024. Additional developments in US public transport were focused on fare-free programmes.
- North American rail systems have not seen significant expansion in years. In February 2025, Canada announced plans to build its first high-speed rail between Quebec and Toronto. In the United States, new ambitions set in 2024 aimed to improve the rail network and address major challenges including the lack of electrified railways, high-speed rail services and strong labour protections for rail workers.
- Progress was made in 2024 to improve US vehicle emission standards, but this was rolled back in 2025 under the new administration.
- In 2025, advances in vehicle technologies continued in Canada but were largely rolled back in the United States. Canada finalised its Electric Vehicle Availability Standard in 2023, requiring that 100% of new light-duty vehicles sold in the country be zero-emission by 2035.
- US states have continued their ambition on sustainable, low-carbon transport by focusing mainly on cleaner vehicle fleets. California has spearheaded the nationwide transition to zero-emission vehicles, although in May 2025 the US Senate repealed waivers that allow the state to set its own air pollution standards for road vehicles.
- The Trump administration's cancellation of US federal funding for electric vehicle activities will reportedly lead to job losses in the transport sector, including in electric vehicle production, as well as negative health outcomes; however, efforts may continue at the state level.
- Proposed increases in US import tariffs could have significant impacts on the automobile industry, especially on the electric vehicle industry, although such tariffs are not necessarily new in the region.
- Major North American airlines took initial steps towards the adoption of sustainable aviation fuel (SAF) in support of their long-term sustainability strategies.

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Context, challenges and opportunities

North America comprises the high-income economies of Canada and the United States as well as the territories of Bermuda (United Kingdom), Greenland (Denmark) and Saint Pierre and Miquelon (France). This regional overview focuses on Canada and the United States, both of which have high personal motorisation rates, strong contrasts between urban and rural transport, and high levels of polluting transport emissions that contribute to climate change. North America accounted for 5% of the global population in 2023 yet contributed 27% of the world's transport greenhouse gas emissions – 1.9 gigatonnes of carbon dioxide (CO_2) equivalent – the second highest share among regions.[2]

Between 2023 and early 2025, North America experienced numerous severe weather events accelerated by climate change. Record-breaking wildfires in Canada in 2023 burned more than 15 million hectares of land (an area roughly the size of the US state of Florida), releasing CO_2 emissions comparable to the annual emissions of India, the world's third largest emitter globally.[3] The fires were likely exacerbated by climate change, as 2023 was the warmest and driest year on record in Canada since at least 1980.[4]

In the United States, the deadliest wildfire in modern history occurred in August 2023 in Hawaii, where the Lahaina Fire claimed 102 lives and destroyed large parts of Maui.[5] The Eaton and Palisades wildfires in the Los Angeles area in January 2025 were the second and third most destructive wildfires in California's history as of March 2025, destroying more than 16,000 structures, burning 15,000 hectares and resulting in 29 fatalities.[6] Severe natural disasters, exacerbated by climate change, have destroyed transport infrastructure and disrupted transport systems. Meanwhile, the sector remains a major source of greenhouse gas emissions in the region, further accelerating climate change and its associated impacts.

Between 2021 and 2024, the US Biden administration introduced a range of policies, strategies and frameworks that marked the first steps towards a comprehensive decarbonisation of transport in the United States. Many of these measures were described as "landmark" activities, spanning all major areas including overall transport, passenger transport and freight transport. However, in 2025 the Trump administration took steps to reverse or pause many of these efforts.

Greater progress on transport climate action and sustainability has been made in Canada than in the United States. While US national efforts have stagnated, individual states and cities have continued to advance climate- and sustainability-related initiatives in transport. Meanwhile, Canada has demonstrated at the national level how transport sustainability and decarbonisation can go hand-in-hand by establishing new funding streams for public transport, walking and cycling, and electric vehicles, as well as linking activities to the 2030 Agenda for Sustainable Development and its Sustainable Development Goals (SDGs).

North America's efforts on sustainable, zero-emission transport have advanced amid growing uncertainty about the durability of policies and legislation on climate, equity and sustainable development. Public budgets have faced increasing strain due to high national debt levels, while shifting policy and expenditure priorities raise concerns about the long-term commitment to sustainability goals. As governments grapple with competing demands, the question remains whether recent progress – particularly in electric mobility, infrastructure investment, and more and better collective transport options – can be sustained in the face of fiscal tightening and evolving political agendas.

Demand, use and access

Transport is a key pillar of the North American economy. In Canada, the sector directly contributed 4% (USD 61.95 billion or CAD 88.5 billion) to the gross domestic product (GDP) in 2023 and employed 844,000 people in 2024.[7] In the United States, transport accounted for 6.5% (USD 1,826.5 billion) of GDP in 2023 and employed 6.7 million people as of January 2025.[8]

- The largest US employment in transport as of January 2025 was in warehousing and storage (1.8 million people) and trucking (1.5 million people), while public transport employed 490,000 people.[9] The job growth rate in the US public transport industry was twice the national average in 2023.[10]
- In Canada, the unemployment rate in the transport sector in 2023 was 2.8%, nearly half the national average of 5.3%.[11] In the United States, the transport unemployment rate remained slightly above the national rate until January 2025, when it reached 3.6%, compared to 4.4% nationally.[12]
- Women accounted for 25% of the transport-related workforce in Canada in 2023.[13] In the United States, women made up 28.5% of those employed in transport and storage, the highest share among all regions and more than double the global average of just 15.6% in 2023.[14]

Access to sustainable, zero-emission transport, especially public transport and safe walking and cycling, remains limited in the region. In 2020, only 57% of the US urban population had convenient access to public transport – above the global average of 52%, yet below Canada's share of 77%.[15]

- Only 30% of people in the United States lived within walking distance (within one kilometre) of both healthcare and education services in 2023, compared to 50% of people in Canada.[16]
- Just 9% of the US population lived within 300 metres of a protected bike lane in 2023, compared to 29% in Canada.[17]
- A 2023 survey showed that in Canada, 38% of Black workers and 29% of mixed-race workers relied on public transport for commuting.[18]
- Access to all-weather roads is an issue of growing importance for Indigenous communities in Canada's remote regions. The Northwest Territories, Yukon and Nunavut account for a large share (40%) of the country's land area but only 1% of its population.[19] In the Northwest Territories, 35% of the road network consists of ice roads that rely on stable cold conditions to remain usable.[20]

Freight transport by road, pipeline and rail continued to play a significant role in economic activity in North America. Freight activity in the United States totalled 7,816 billion tonne-kilometres in 2022, a level similar to 2017 but still 3.7% below the all-time high of 2018.[21] US freight activity grew 1.7% in 2021 and 1.8% in 2022, driven mainly by an increase in rail freight.[22]

- In Canada, road freight accounted for 50% of total freight activity, followed by pipelines at 36% and railways at 14%, as of 2014 (latest data available).[23] Since then, rail freight activity has increased 155%, reaching 463.9 billion tonne-kilometres in 2022.[24]
- Road freight accounted for the largest share of US freight activity (40.6%), followed by rail (28.6%) and pipelines (19.9%).[25] In 2022, US pipeline freight activity reached its highest level since 2000.[26]
- In 2023, 1.7 billion metric tonnes of goods were transported by rail in the United States, with fossil fuels accounting for the largest share at 43%.[27] The highest-value commodity transported by US rail in 2022 was vehicles, at a total value of USD 125.6 billion, three times above the commodity value of fossil fuels, the second largest category.[28]
- The United States added more than 100,000 kilometres of pipelines for liquid fuels between 2010 and 2024, and several natural gas pipelines were completed in recent years.[29]

Across the region, passenger transport activity increased again after the sharp declines experienced during the COVID-19 pandemic in 2020. Passenger transport activity in the United States increased 12% in 2021 but then fell 2% in 2022.[30]

- US passenger transport activity declined from 10,290 billion passenger-kilometres in 2019 to 8,490 billion in 2020, before rebounding to 9,550 billion in 2021.[31] Passenger activity fell to 9,324 billion passenger-kilometres in 2022, likely due to ongoing concerns about a volatile economy.[32]
- Domestic aviation in the United States grew 9% in 2023 to a record high of 1.25 billion passenger-kilometres.[33]
- Although all modes of US passenger transport experienced steady growth in 2022, road transport activity on highways fell 5.8%.[34]

Rail passenger transport in the United States grew 19% in 2023 to reach 9,376 million passenger-kilometres; rail ridership was up 104% from the historic low of 4,603 million passenger-kilometres in 2021 but still 10% below the 2019 level (10,440 million passenger-kilometres).[35] A total of 28.5 million US rail trips were taken in 2023, with nearly every route experiencing double-digit growth in ridership that year.[36] Rail passenger activity in Canada doubled in 2022 – from 542 million to 1,228 million passenger-kilometres – but was still below the 2019 level of 1,729 million passenger-kilometres.[37]

Four out of five workers in North America commuted primarily by private vehicle in 2022.[38]

- As of 2022, 140 million people in the United States commuted to work daily, while 20 million worked remotely (15.2% of the workforce).[39] Compared to 2019, this was a shift of 9 million people from office work to remote work.[40]
- More than three-quarters (77.3%) of people in the United States used their private vehicle for commuting in 2022, with 88% of them driving alone.[41] Only 2.9% of US workers walked or biked to work in 2023.[42]
- The average commute time was 26.4 minutes in both the United States (2022 data) and Canada (2024 data).[43]
- In Canada, the number of commuters has continued to increase, totalling 16.5 million in May 2024.[44] The vast majority of people in the country (81.5%) used a private vehicle to travel to work that month.[45]
- In Canada, 18.7% of employed people worked mostly from home as of May 2024, down 3.7 percentage points compared with May 2022.[46]

US public transport ridership increased 17% in 2023 – reaching 6.9 billion trips and 56 billion passenger-kilometres – but it still did not recover from pandemic-related declines in 2020 and 2021.[47] In Canada, passenger trips on public transport grew 12% between January 2023 and January 2024 – to a total of 127 million trips – but was still 29% below January 2020 levels, with revenues down 20%.[48]

- As of 2023, public transport use in the United States remained below 1980 levels, with 7 billion passenger trips recorded, compared to 9 billion in 2019, before the COVID-19 pandemic.[49]
- New York City accounted for nearly half (46%) of all US public transport trips in 2023; however, the city's ridership

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remained at around half of its 2019 level.[50]

Walking and cycling play important roles in regional transport but are often overlooked and undercounted. During a typical week, only around 7% of people in the United States rely entirely on non-auto modes of transport, whereas 65% use a car plus another mode at least once a week, around half use non-auto modes at least three times a week, and 25% use a non-auto mode seven or more times each week.[51] In 2022, less than 8% of all US trips were made by walking or cycling, compared with 87% using primarily personal motorised vehicles (cars, vans, trucks, motorcycles).[52] However, large disparities exist between rural and urban areas, as well as within urban regions.[53] Walking and cycling remain undercounted in key statistics due to methodological issues that ignore multi-modality and the trips made to and from public transport.[54]

- Although 2.2 billion bicycle trips were taken in the United States in 2022, they totalled fewer than 10,000 million passenger-kilometres, representing just 0.1% of all passenger travel activity.[55] Walking accounted for an estimated 25,000 million US passenger-kilometres (0.28% of total passenger travel activity) in 2022, down sharply from 54,156 million passenger-kilometres in 2017.[56]
- The 2022 National Household Travel Survey found that 6.9% of all US trips were made by walking and 0.9% by bicycle.[57] More than half (52%) of US cycling trips in 2022 were for social or recreational purposes.[58]
- New York City had the highest share of sustainable transport modes among major US cities in 2022, with 44% of all trips conducted by walking and 2.6% by bicycle, compared to 34% by vehicles.[59]

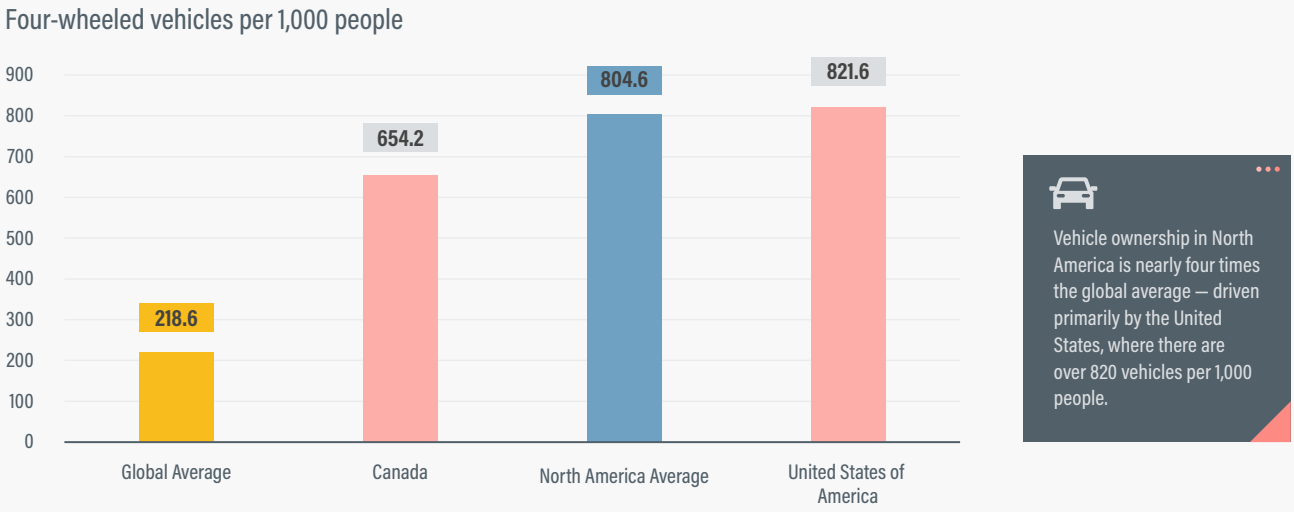
Shared micromobility (bicycles and electric scooters) in North America reached a new record high in 2023, with 157 million rides taken in the United States, surpassing the 147 million rides recorded in 2019.[60] However, fares for annual passes increased 20-30% between 2019 and 2023, raising growing concerns about affordability.[61]

- Shared micromobility grew nearly 20% in the United States and Canada in 2023.[62]
- In recent years, bike share fares have exceeded public transport fares, and prices for shared electric bicycles and electric scooters were even higher, despite offering shorter trips than conventional bike sharing services.[63]

Although average US petrol prices have fallen from their historic peak in 2022, transport costs place a higher household burden on North America than most regions due to its high dependency on private vehicles.

- The average US petrol price fell to USD 0.87 per litre (USD 3.3 per gallon) in 2024, down from more than USD 1.05

FIGURE 1. Motorisation rates per 1,000 people in North America, 2022



Source: See endnote 69 for this section.

per litre (USD 4 per gallon) in 2022 and USD 0.92 per litre (USD 3.5 per gallon) in 2023.[64] US petrol prices remained the lowest among member countries of the Organisation for Economic Co-operation and Development (OECD) in 2024.[65]

- On average, US households allocated 16% of their total expenditures to transport in 2023, compared to 11% for European households, despite facing higher taxes, priced parking and toll roads in Europe.[66]
- Between 2003 and 2019, a link was found between rising US fuel prices and the increased use of public transport, walking, and cycling – mainly in urban areas, as rural commuters often lack access to public transport networks.[67]
- The typical US pattern of rising petrol prices leading to reduced vehicle-kilometres travelled has been disrupted since 2020. Both petrol prices and vehicle-kilometres travelled were exceptionally low in 2020 and then increased sharply in 2021; in early 2022, vehicle-kilometres travelled declined before petrol prices dropped, leading to a reduction in total passenger-kilometres for road transport.[68]

The region's motorisation levels (covering four-wheeled motor vehicles) remained at an all-time high in 2022, at four times the global average and 15 times higher than in Africa (Figure 1).[69] Canada had a motorisation rate of 654 vehicles per 1,000 people in 2022, while the rate in the United States was even higher at 822 vehicles per 1,000 people.[70]

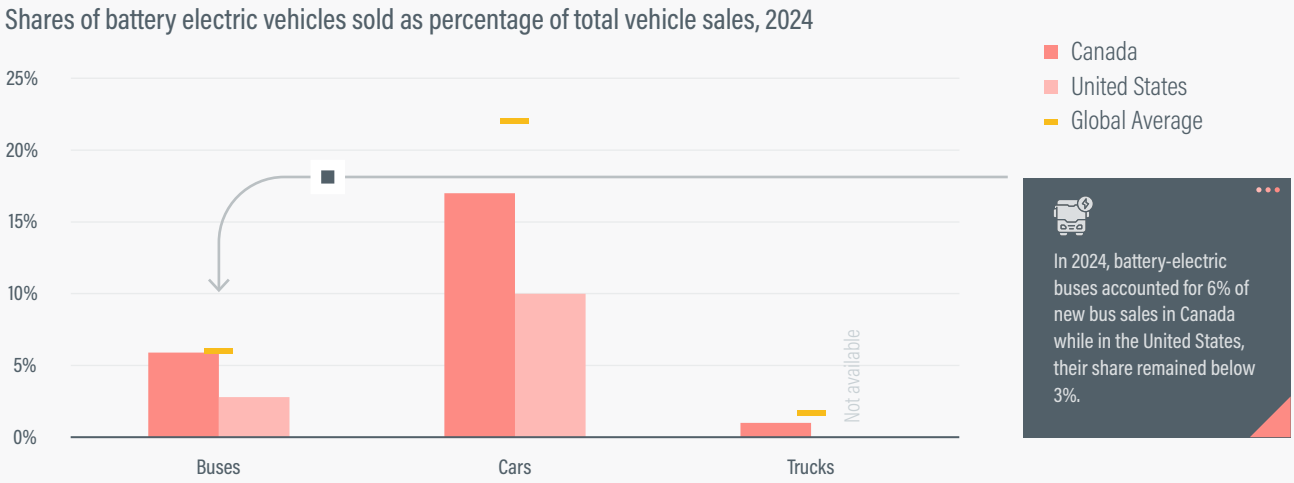
Vehicle sales in Canada increased 13% in 2023 to 1.76 million units.[71] The US vehicle market showed similar growth, with sales totalling 16 million units that year.[72]

- In the United States, sport utility vehicles (SUVs) reached a record-high market share of 57% for the model year 2023 production (including both car-based and truck-based SUV models).[73]
- As of mid-2023, the new vehicle market in the United States was described as the "least affordable car market in modern history", with only 8% of new vehicles retailing for under USD 30,000.[74]

Electric passenger car sales in North America continued their near-exponential growth until 2023, then grew modestly in 2024.[75] The United States accounted for 11% of global battery electric passenger car sales in 2024, surpassing 1 million units for the first time with 1.1 million new registrations in 2023 and 1.2 million in 2024.[76] After a strong increase of 37.5% in 2023, US sales of battery electric cars grew only 9% in 2024.[77] In Canada, sales increased 43% in 2023 and 46% in 2024, rising from 91,000 in 2022 to 190,000 units in 2024.[78] Battery electric cars comprised 17% of total vehicle sales in Canada and 10% in the United States in 2024 (Figure 2).[79]

- Between 2022 and 2024, the share of electric cars in the total car stock doubled from 1.3% to 2.7% in the United States and from 1.7% to 4.2% in Canada.[80]
- The share of battery electric vehicles in the United States is projected to reach only 16% in 2030 and 21% in 2050.[81]

FIGURE 2. Shares of battery electric vehicles sold in Canada and the United States, 2024



Source: See endnote 79 for this section.

This is well below the pathway needed to achieve the goals of the Paris Agreement, which requires that electric vehicle sales exceed 60% globally by 2030 and that no new cars with internal combustion engines are sold after 2035.[82]

- US interest in electric vehicles appeared to wane in 2024, as consumer surveys showed a 10-percentage point decline in the share of people considering an electric vehicle for their next vehicle purchase (to only 30-34% of Americans).[83]

More electric buses and heavy-duty trucks have entered service in North America, including in both municipal and private fleets.

- US adoption of zero-emission buses surged 100% in 2022, with 2,400 electric and 140 fuel-cell electric buses sold.[84] By 2023, diesel-powered buses made up less than half of the US public transport fleet, and hybrid plug-in electric buses had an 18% market share.[85] In total, 9,500 electric buses were in use in the United States in 2024.[86]
- Electric buses accounted for 24% (790 units) of all buses sold in Canada in 2023, falling to just 5.9% (210 buses) in 2024.[87]
- As of 2024, 5,300 electric trucks (1.2% of all sold trucks) were operating on Canada's roads.[88]
- In 2023, DHL announced the deployment of its first Class 8 electric trucks, supporting the company's 2030 target for a North American supply chain based on 30% zero- or near-zero emission vehicles.[89]
- Amazon deployed 35 Class 8 electric trucks in southern California in 2024, accompanied by the installation of more than 45 direct current fast chargers across 11 sites.[90]
- In 2024, Hyundai completed the largest single commercial deployment of hydrogen fuel cell electric trucks, delivering 30 Class 8 units to a freight company in northern California.[91]

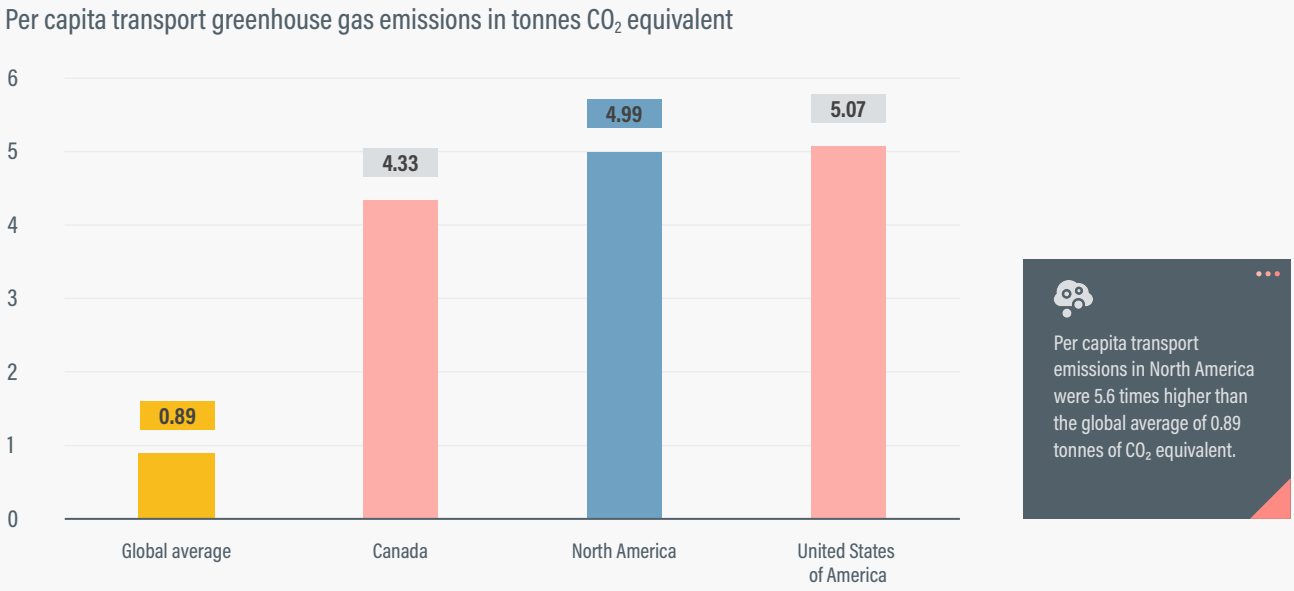
Sustainability and climate trends

In 2023, North America was responsible for 26.7% of global transport greenhouse gas emissions (excluding international aviation and shipping), the second highest regional share after Asia (40.3%).[92] Transport emissions in North America increased 0.72% in 2023 – reaching 1.9 gigatonnes of CO_2 equivalent – but were still below 2019 levels.[93] Between 2019 and 2023, the region's annual emissions growth rate was the third lowest globally due to already very high emission levels.[94] (Europe achieved absolute reductions in transport emissions in 2023, while Africa's grew only 0.11%.[95])

Per capita transport emissions totalled 4.3 tonnes of CO_2 equivalent in Canada and 5.1 tonnes in the United States in 2023 – roughly five times higher than the global average of 0.9 tonnes (Figure 3).[96] Key factors behind high per capita emissions are high private motorisation levels and long travel distances. Light-duty vehicles had an average fuel consumption of 8.5 litres of petrol-equivalent per kilometre in Canada and 8.4 litres in the United States in 2022.[97]

In 2023, transport was the largest contributor to US

FIGURE 3. Per capita transport greenhouse gas emissions in North America, 2023



Source: See endnote 96 for this section.

greenhouse gas emissions (accounting for 29% of total emissions) and the second largest contributor to Canadian emissions (22.6%).[98] The transport sector became the largest US emitter in 2019 when it surpassed the power sector, which benefited from significant increases in renewable energy.[99] In Canada, transport was the largest greenhouse gas-emitting sector until 2005, when it became the second largest after fuel exploitation.[100]

The United States was the world's largest emitter of transport greenhouse gases in 2023, contributing nearly a quarter of the global total (excluding international aviation and shipping), at 1,735 million tonnes of CO_2 equivalent.[101] US transport greenhouse gas emissions fell 14% in 2020 due to the effects of the COVID-19 pandemic, and as of 2023 they remained at 2015/16 levels.[102] In Canada, transport emissions have plateaued at around 170 million tonnes of CO_2 equivalent since 2007, totalling 169 million tonnes in 2023.[103]

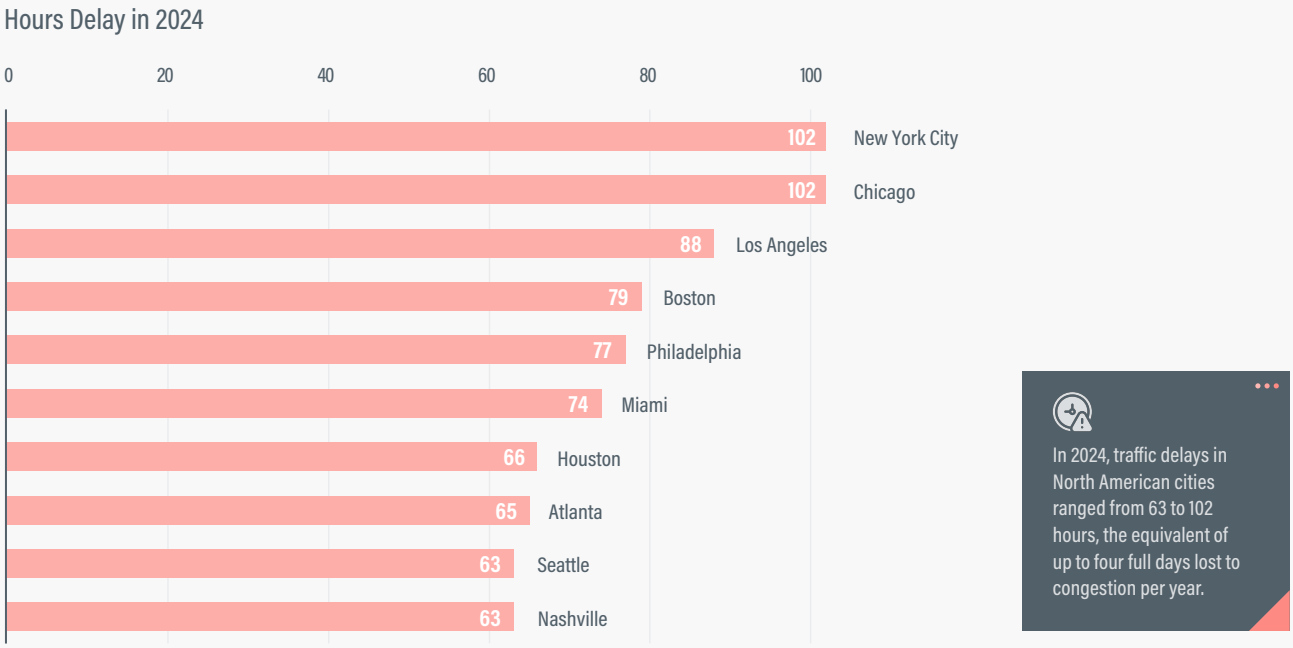
Road transport continued to dominate North American transport greenhouse gas emissions, contributing 81.7% of US transport emissions in 2022 and 62% of Canada's in 2023.[104] In Canada, road passenger transport was responsible for 54.4% of transport emissions, road freight transport for 24.3%, and maritime transport for 3%, in 2021 (latest data available).[105] In the United States, freight transport was responsible for 31.9% of transport greenhouse gas emissions in 2022, up from only 27% in 2010.[106]

- Canada's second highest emitter of transport emissions in 2023, at 29%, was pipelines and "vehicles not licensed to operate on roads", including all-terrain vehicles and dirt bikes.[107]
- Since 2015, road freight transport greenhouse gas emissions in Canada have been affected by the economic slowdown of 2018 and the COVID-19 pandemic of 2020, resulting in lower emissions compared to the 2010s.[108]
- In 2022, trucks contributed the largest share of US freight-related emissions at 72.2%, followed by pipelines at 12.2%.[109]
- With an 18.9% increase between 2010 and 2022, freight was the main driver of growth in US transport emissions.[110]

The average energy efficiency of new light-duty vehicles sold in the United States reached its highest value in 2022, marking the largest improvement in nine years, but it still lagged behind other countries.[111]

- The average energy efficiency of new vehicles in the United States increased 4% between 2020 and 2022 – to reach 8.4 litres of petrol-equivalent per 100 kilometres in 2022 – although this was still well above the European average of 5.4 litres.[112]
- For US vehicle models produced in 2023, real-world CO_2 emissions showed significant improvements. Due largely to the higher share of battery electric vehicles among car-based SUVs (36%), this category emitted 190 grams of

FIGURE 4. Hours of annual average traffic delays in major North American cities, 2024



Source: See endnote 118 for this section.

CO_2 per mile.[113] In contrast, truck-based SUVs emitted 356 grams of CO_2 per mile, while pick-up trucks recorded even higher emissions at 432 grams per mile.[114]

The carbon intensity of electricity has improved steadily in North America in recent years. Increasing the share of renewable and low-carbon energy sources in the region's power grids can help maximise the positive impacts of the electric vehicle transition.

- In Canada, the carbon intensity of electricity improved 27% between 2010 and 2022 – reaching 156.8 grams of CO_2 equivalent per kilowatt-hour (kWh) – but then worsened to 174.8 grams of CO_2 per kWh in 2024.[115]
- The United States recorded a 12% improvement in carbon intensity between 2019 and 2024, although levels remained high at 384 grams of CO_2 equivalent per kWh in 2024.[116] Progress was due largely to a 10-fold increase in US solar power generation between 2015 and 2024, alongside a halving of coal use.[117]

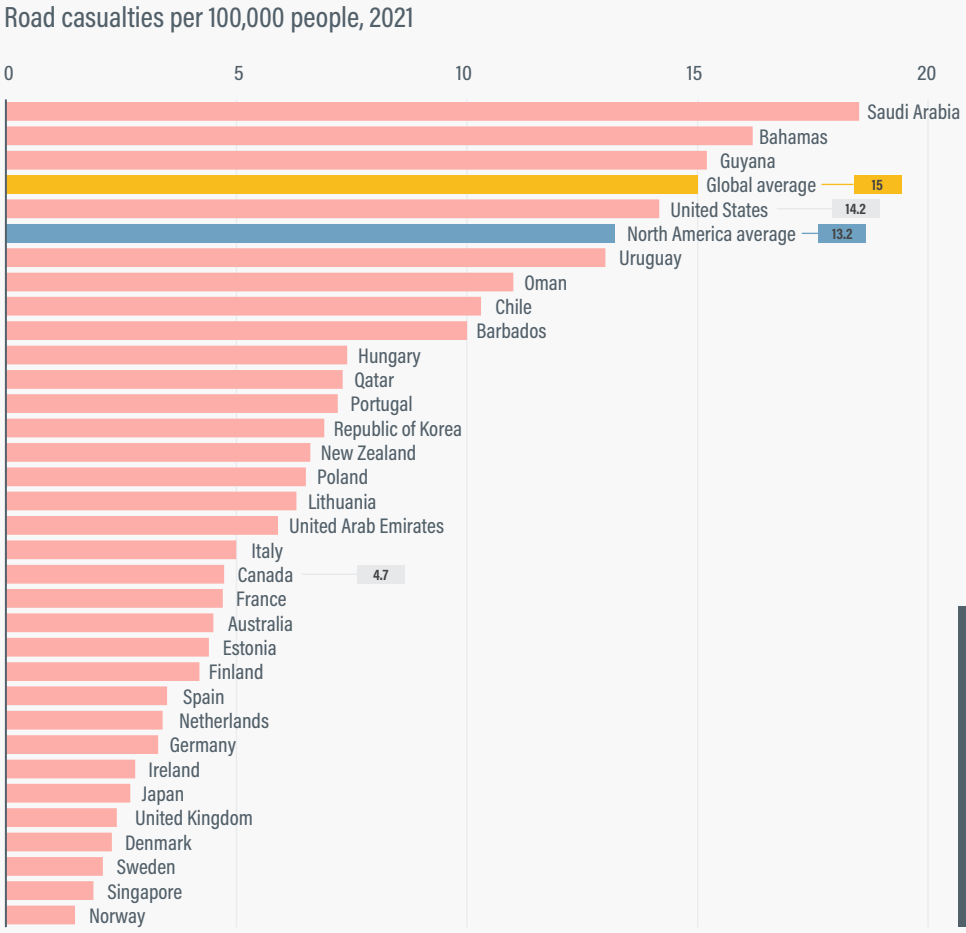
Several North American cities experienced among the highest congestion levels globally in 2024, with motorists in the region's 10 most congested cities facing more than 60 hours of traffic delay annually (Figure 4).[118] These data and impacts focus mainly on private vehicle commuters. In cities with high delays but lower overall shares of car use (such as New York City and Boston), the average delay (and thus congestion cost) on a per capita basis is lower than in more car-dependent regions (such as Atlanta and Houston).[119]

- New York City had the highest average level of traffic delay worldwide in 2023 (101 hours) and the second highest level in 2024 (102 hours), after Istanbul (Türkiye) at 105 hours.[120]

The transport sector was responsible for around 12.6% of North America's air pollution in 2019, more than double the global average (6%).[121] Transport contributed 15% of US air pollutant emissions in 2019 and 9.8% in Canada – resulting in 2.29 premature deaths per 100,000 people in the United States (consistent with the global average) and 1.01 premature deaths in Canada (half the global average).[122]

North America recorded 13.2 road casualties per 100,000 people in 2021, close to the global average of 15 casualties per 100,000 people (Figure 5).[123] Road traffic fatalities and injuries accounted for 1.9% of Canada's GDP and 5% of the US GDP in 2021.[124] Less than 40% of the road length assessed in North America meets the recommended three-star or better safety standard for pedestrians and cyclists, compared to 60% for motorcyclists and more than 80% for vehicle occupants.[125]

FIGURE 5. Road casualties per 100,000 people in selected high-income countries, 2021



In 2021, the United States had one of the highest road traffic fatality rates among high-income countries — despite being slightly below the global average.

Source: See endnote 123 for this section.

- Among high-income countries, the United States had one of the most dangerous road safety records in 2021, ranking just behind Saudi Arabia, the Bahamas and Guyana.[126]
- Road traffic fatalities have been rising in the United States.[127] In 2021, 42,939 people died in US road crashes, and pedestrian fatalities reached a record high.[128] Around 20% of the people killed in US road traffic crashes in 2021 were pedestrians or cyclists.[129]
- The United States recorded 14.2 road casualties per 100,000 people in 2021, well above the average rate across high-income countries (7.7 road casualties) and in Europe (5.8 road casualties).[130]
- Canada had 4.7 road casualties per 100,000 people in 2021, with around 20% of those killed being pedestrians or cyclists.[131]

The United States has experienced a record number of climate-induced disasters, with 28 events in 2023 costing USD 96 billion in damages and 27 events in 2024 costing USD 182.7 billion.[132] This was up sharply from an annual average of nine climate-induced disaster events between 1980 and 2024.[133]

Climate change threatens the supply networks of Canada's Indigenous communities, with around 50 communities (56,000 people) relying on a 6,000-kilometre winter road network.[134] The winter of 2024-25 was too warm for sufficient surface freezing, disrupting vital deliveries.[135]

Policy and investment developments

The change in administration in the United States has affected the outlook for equitable, sustainable, and zero-emission transport in the country, resulting in the halting of several policies and a reversal in ambition. In Canada, it remained unknown (as of the publication of this report) whether the new administration would maintain or revisit the approach of the outgoing administration.

Canada continued to advance its 2019 vision calling for "a transport system...that is recognised worldwide as safe and secure, efficient and environmentally responsible", including by integrating the Sustainable Development Goals (SDGs) into nationwide strategies starting in 2023.[136]

- In its 2022-2026 Federal Sustainable Development Strategy, Canada's first strategy to outline implementation of all SDGs, Transport Canada committed to advancing six SDGs: SDG 10 (Reduced Inequalities), SDG 11 (Sustainable Cities and Communities), SDG 12 (Responsible Consumption and Production), SDG 13 (Climate Action), SDG 14 (Life Below Water) and SDG 16 (Peace, Justice and Strong Institutions).[137]
- Under SDG 11, the target is to increase – from 60% in 2005 to 85% by 2030 – the share of the population living in areas where air pollutant concentrations meet or fall below the Canadian Ambient Air Quality Standards.[138]

In 2024, Canada announced its 2030 Emissions Reduction Plan, which calls for a 23% reduction in transport greenhouse gas emissions from 186 million tonnes of CO_2 equivalent in 2019 to 143 million tonnes by 2030.[139] Additional government actions explore opportunities for rail, aviation, maritime transport, and other modes, and address zero emission vehicles and fuels, electrification and charging infrastructure.[140] The latter include: zero-emission vehicle sales mandates for light-duty vehicles, an integrated strategy to support zero-emission medium- and heavy-duty vehicles, investments in charging infrastructure, purchase incentives, heavy-duty vehicle retrofitting, hydrogen demonstration projects and government fleet electrification.

In January 2023, the United States released its inter-agency National Blueprint for Transportation Decarbonization, a landmark strategy to drastically reduce transport greenhouse gas emissions towards net zero by 2050.[141] The strategy outlines how to "deliver safe, effective, affordable, and sustainable solutions to existing and emerging challenges" and lays out targets and actions for 2030, 2040 and 2050.

- The strategy summarises actions in three areas: "convenient" – improve community design and land-use planning (planning, telework, e-commerce, travel demand management, active mobility); "efficient" – increase options to travel more efficiently (pool riding, operational improvement, public transport, rail and shipping, vehicle fuel economy); and "clean" – clean electricity, sustainable biofuels, e-fuels, clean hydrogen).[142]
- The strategy highlights that the Infrastructure Investment and Jobs Act (Bipartisan Infrastructure Law) and the Inflation Reduction Act are essential enablers towards a safer and more sustainable US transport system.[143] The Inflation Reduction Act supports climate action, while the Bipartisan Infrastructure Law aims to improve infrastructure in the United States.[144]

The Bipartisan Infrastructure Law of 2021 authorised USD 1.2 trillion for transport and infrastructure investment across the country, including USD 550 billion for new projects between 2022 and 2026.[145] The Law supported "historic investments in transport" and the opportunity to embrace equity and sustainability in transport investments.[146] However, a review of more than 56,000 funded projects in early 2024 (marking the halfway point of the Law) revealed that 50% of the investments were allocated to the modernisation or expansion of highways.[147] Less than 20% were directed towards public transport and passenger rail initiatives, suggesting that the Law might result in additional emissions of around 178.5 million tonnes of CO_2 equivalent by 2040.[148] The highway expansions that are already obligated for spending will add an estimated 69 million tonnes by 2040.[149]

The Inflation Reduction Act, signed in August 2022, was the largest investment focused on climate change in US history.[150] Transport-related investments under the Act focused mainly on providing tax incentives to electric vehicle owners as well as auto manufacturers. Following the Act's passage, manufacturers announced plans to invest around USD 125 billion in US electric vehicle and battery manufacturing.[151]

In January 2025, the Trump administration halted the disbursements of funds through the Inflation Reduction Act and the Bipartisan Infrastructure Law through an executive order, which eliminated electric vehicle mandates.[152] The stated purpose was to "promote true consumer choice" and to remove any "ill-conceived government-imposed market distortions that favour EVs over other technologies".[153]

The United States and Canada have both submitted to the United Nations their third Nationally Determined Contributions (NDCs) towards reducing emissions under the Paris Agreement, which include transport actions. The new US NDC, which updates efforts in the previous (2021) NDC, was submitted in December 2024, just before President Trump signed a January 2025 order to again withdrew the country from the Paris Agreement.[154] Canada submitted its third-generation NDC in February 2025.[155]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- The US NDC of 2024 features an economy-wide target to reduce net greenhouse gas emissions 61-66% below 2005 levels by 2035.[156] On transport, the NDC highlights the roles of the Inflation Reduction Act and the Bipartisan Infrastructure Law to shift towards cleaner and convenient transport and to scale up domestic manufacturing.[157] The focus is on electrification across all modes, increasing public transport and walking and cycling options, and supporting low-carbon fuels.[158]
- Analysis suggests that, to be aligned with the Paris Agreement's target of keeping global temperature rise below 1.5 degrees Celsius, the new US NDC should have aimed for reductions of 65% by 2030 and 80% by 2035, compared with 2005 levels.[159]
- Canada's new NDC sets an economy-wide target to reduce emissions 45-50% below 2005 levels by 2035, and highlights the decarbonisation of road transport and the phase-out of fossil fuel-powered cars by 2035.[160]
- Canada's NDC features additional targets for several provinces and territories, including increasing the sales share of light-duty zero-emission vehicles in British Columbia to 90% by 2030 and 100% by 2035; reducing transport emissions in Prince Edward Island 25-30% by 2030; and reducing road transport emissions in Yukon 30% below 2010 levels.[161]

For the latest analysis of transport commitments in NDCs, including those expected ahead of COP30, see the NDC Transport Tracker by GIZ and SLOCAT*, a database on ambition, targets and policies in NDCs and Long-Term Strategies.*[162]

The two countries also released new national adaptation strategies between 2023 and 2025. The United States submitted a National Adaptation Plan (NAP) to the United Nations in January 2025 (under the Biden administration), and Canada released a National Adaptation Strategy in 2023.[163]

- The US NAP is an extensive document combining several strategies, such as the National Climate Resilience Framework (2023) and the Department of Transportation's 2024-2027 Climate Adaptation Plan (2024).[164]
- Canada's National Adaptation Strategy outlines that, starting in 2024, all new federal infrastructure funding programmes should reflect resilience to climate change impacts, and by 2026 the Canadian Highway Bridge Design Code should reflect resilience considerations.[165]
- Canada's complementary Adaptation Action Plan of 2024 sets specific actions and funding, including using the National Trade Corridors Fund of USD 3.22 billion (CAD 4.6 billion) to help the transport system withstand the effects of climate change and better adapt to new technologies and innovation, while addressing mobility needs in Arctic and northern communities.[166] In 2021, the Canadian government opened the 97-kilometre Tłı̨chǫ All-Season Road in 2021 in the Northwest Territories.[167]

In the United States, policy for clean freight transport advanced with the release of the National Zero-Emission Freight Corridor Strategy in March 2024 and the hosting of the "first-ever White House Sustainable Freight Workshop" in December 2024.

- The National Zero-Emission Freight Corridor Strategy – a "landmark" strategy towards zero-emission freight transport – notes that 75% of US heavy truck traffic uses only 4% of the road network, but has negative health effects on vulnerable communities.[168] Providing electric vehicle charging stations along these corridors could support the US targets for sales of zero-emission medium- and heavy-duty vehicles (at least 30% by 2030 and 100% by 2040), as laid out in the National Blueprint for Transportation Decarbonization.[169]
- The White House sustainable freight workshop brought together more than 100 stakeholders to discuss emission reductions in the freight sector.[170]

US land use policy reforms have supported a shift towards integrated transport planning in various jurisdictions. The aim is to counteract a severe housing shortage that drives inflation and displaces people, with mortgage rates at an all-time high and the growth in rents exceeding overall inflation.[171] Analysts note that much of the US housing shortage could be addressed by enabling higher-density housing around public transport stations through effective transit-oriented development.[172] However, the country continues to lack nationwide frameworks that could enable systematic transformation through integrated land use and transport planning.

- Several studies on zoning and land use confirmed that jurisdictions with reformed and updated zoning approaches (such as California, Houston, New York State and Washington, D.C.) were able to provide more housing units than state-wide averages.[173]
- The state of Massachusetts adopted a transit-oriented development strategy with the passage of a bill in 2021, and as of mid-2025 around 100 cities and towns in the state had met the new regulations.[174]
- In December 2022, Santa Monica (California) implemented the first US pilot of a low-emission zone, designating a one-square-mile area as a "Zero Emission Delivery Zone."[175] By 2024, seven more US cities – Los Angeles, Louisville, New York City, Oakland, Pittsburgh, Portland (Oregon) and Washington, D.C. – as well as Miami-Dade County were implementing zero-emission delivery policies.[176]

In 2023, fossil fuel subsidies in North America totalled USD 2,172 per capita, nearly 3 times the global average (USD 813) and more than 10 times the African average (USD 199).[177] The region's fossil fuel subsidies are projected to rise 17% between 2023 and 2030, further undermining climate and sustainability efforts.[178] The substantial subsidies have incentivised fossil fuel use, contributing to high greenhouse gas emission levels.

In January 2025, New York City became the first US city to implement congestion pricing, with each passenger vehicle that enters the "Congestion Relief Zone" facing a daily charge of up to USD 9 at peak times.[179] The aim is to reduce vehicle trips and to increase the attractiveness of public and other forms of transport, helping the state of New York achieve its goal to reduce greenhouse gas emissions 40% below 1990 levels by 2030.[180] As much as 80% of the revenue, estimated to reach USD 15 billion per year, will be used to improve the city's public transport system.[181] From day one, the congestion pricing scheme reduced traffic and cut the average commute time, which fell by half on some major routes during evening rush hours.[182] Between January and March 2025, the number of vehicles entering the regulated zone daily fell 12% (by 80,000 vehicles per day), while travel times for drivers within the zone fell 10-30%.[183]

North America has pledged greater investments in infrastructure for walking and cycling.

- In 2024, British Columbia (Canada) agreed to invest an additional USD 35 million (CAD 50 million) in walking and cycling over three years, adding to the USD 70 million (CAD 100 million) allocated in 2023.[184] The new funds are aimed at closing gaps in the active transport network by building new bicycle lanes and enhancing the safety of people walking and cycling.[185]
- The US Department of Transportation's strategic plan for 2022-2026 aims to increase the percentage of trips by public transport, walking, and cycling 50% by 2026, compared to 2020 levels.[186]
- In 2024, the US Biden administration announced USD 45 million in funds to improve connectivity and safety for cycling and walking.[187]

Very few new public transport services were launched in North America between 2022 and 2024. In 2024, Canada announced the Canada Public Transit Fund (CPTF), which will pursue major improvements in public transport, walking, and cycling and is expected to distribute USD 2.1 billion (CAD 3 billion) annually starting in 2026-27.[188] In the United States, the Biden administration announced in 2024 USD 4 billion to support 14 major public transport construction projects across 11 states.[189]

- In Montreal (Canada), the REM light rail, launched in 2023, served five stations along a 16.6-kilometre route as of 2025; once completed, the urban rail network will serve 26 stations along 67 kilometres.[190]
- Ottawa (Canada) reopened its 19-kilometre Line 2 light rail service in January 2025.[191]
- In the United States, around 170 kilometres were added to the urban rail and bus rapid transit in 2024, with a further 150 kilometres expected in 2025.[192] (Comparable data for Canada were not available.)
- In Honolulu (United States), the first rail-based public transport system began passenger operations in June 2023.[193]

- Seattle (United States) recorded several new light rail expansions and bus rapid transit services in 2024.[194] Also that year, Seattle ordered the country's first double-decker electric buses with inductive wireless charging technology, to be delivered by 2026.[195]

Additional developments in US public transport were focused on fare-free programmes. However, more promising approaches to reduce vehicle travel and emissions include policies that improve public transport service quality, integrate public transport with compact development and pedestrian improvements, and support transport-demand management.[196]

- In Boston, a successful fare-free bus service on specific routes, implemented in 2022, has been extended until 2026.[197]
- Los Angeles provides free public transport to 400,000 students through the Metro GoPass programme, which was made permanent in April 2024.[198]
- The state of Connecticut is using federal funding of USD 38.9 million to electrify its bus rapid transit system, in support of a commitment to be carbon-free by 2035.[199]

North American rail systems have not seen significant expansion in years. In February 2025, Canada announced plans to build its first high-speed rail between Quebec and Toronto.[200] In the United States, new ambitions set in 2024 aimed to improve the rail network and address major challenges including the lack of electrified railways, high-speed rail services and strong labour protections for rail workers.[201] Most of the rail improvements in 2023 and 2024 were to the rolling stock. Because electrified rail remains rare in the region, alternative solutions such as carbon-free hydrogen are being explored.

- In February 2025, Canada announced plans for the Toronto-Quebec City High-Speed Rail Network (Alto) – the country's largest-ever infrastructure project – which includes 1,000 kilometres of passenger-dedicated electrified track connecting seven cities in Ontario and Quebec. The federal government allocated USD 2.7 billion (CAD 3.9 billion) in 2025 for the initial design phase, and the entire project (to be completed by 2043) is expected to cost USD 55-83 billion (CAD 80-120 billion).[202]
- In 2023, Amtrak announced a "new era of rail" in the United States, coupled with a USD 50 billion investment to modernise rolling stock and infrastructure.[203] In December 2024, the All Aboard Act was introduced, proposing USD 200 billion over five years to establish an accessible, reliable, and electrified rail network, with improved protections for rail workers.[204]
- The Biden administration announced in 2024 that USD 2.4 billion under the Bipartisan Infrastructure Law would be used to support 122 rail improvement projects in 41 US states and Washington, D.C.[205]

- Caltrain introduced new electric trains in San Francisco (United States) in 2024.[206]
- The first hydrogen-powered passenger train began testing in California (United States) at the end of 2024.[207] California expanded its hydrogen-powered passenger rail vehicles in 2024, to total 10 vehicles.[208]
- The first section (275 kilometres between Merced and Bakersfield) of the high-speed rail project in California is expected to be operational from 2030.[209] The Trump administration has said it would investigate the project due to alleged poor management and high costs.[210]

Progress was made in 2024 to improve US vehicle emission standards, but this was rolled back in 2025 under the new administration. In 2024, the US Environmental Protection Agency (EPA) finalised improved emission standards to reduce harmful air pollutants from light- and medium-duty vehicles, for model years 2027-2032.[211] However, in March 2025 the EPA rolled back the rules on vehicle tailpipe emissions, among other emission regulations.[212] The improved standards were anticipated to reduce greenhouse gas emissions from light-duty vehicles 11% per year from 2027 to 2032, and were seen as a key support tool to allow the United States to catch up globally on the transition to electric vehicles.[213] The regulations ensured that light-duty vehicles would not emit more than 170 grams of CO_2 per mile in 2027 and 85 grams in 2032, while medium-duty vehicles would not emit more than 461 grams of CO_2 per mile in 2027 and 274 grams in 2032.[214] For non-methane organic gases (NMOG) and nitrogen oxides (NO_x), the standards aimed to achieve 30 milligrams of NMOG+NO_x per mile in 2027 and 15 milligrams per mile in 2033, while medium-duty vehicles would target 75 milligrams per mile in 2033.[215]

In 2025, advances in vehicle technologies continued in Canada but were largely rolled back in the United States. Canada finalised its Electric Vehicle Availability Standard in 2023, requiring that 100% of new light-duty vehicles sold in the country be zero-emission by 2035.[216] In the United States, President Trump signed an executive order in 2025 to remove the target for 50% of all new vehicles sold to be zero-emission by 2030, which had prompted the auto industry to shift towards cleaner vehicles.[217] The removal of the target was coupled with the reversal of other Biden-era electric vehicle policies, resulting in a halt in federal incentives and subsidies for electric vehicle purchases, and funding for charging infrastructure.[218]

- Under Canada's new standard, the interim targets aim for at least 20% zero-emission vehicle sales by 2026 and at least 60% by 2030.[219] The transition is supported through the USD 462 million (CAD 660 million) Incentives for Zero-Emission Vehicles programme.[220] Under the policy, Canada's electric light-duty fleet is projected to grow from 480,000 in 2024 to 21 million in 2040, and its fleet of zero-emission medium- and heavy-duty vehicles could reach 414,000 in 2030 and 2.4 million in 2040.[221]
- To achieve these targets, Canada estimates that the number of public charging ports for light-duty vehicles would need to increase from 100,000 in 2025 to 679,000 by 2040.[222] For medium- and heavy-duty vehicles, the number of public and private charging ports would need to grow from near-zero in 2024 to 41,000 in 2030 and 275,000 in 2040.[223]
- The US Postal Service announced plans in 2022 to acquire 106,000 new vehicles – with at least 66,000 of them designated as electric delivery vehicles – representing a USD 10 billion investment in fleet modernisation.[224] In 2023, the US Congress allocated USD 3 billion to the Postal Service to support electric vehicle acquisition as part of the country's USD 430 billion climate bill.[225] As of early 2025, the Trump administration had criticised this contract, but it was unlikely to be fully cancelled.[226]
- By January 2025, around 206,000 public charging ports were available in the United States, of which 38,000 were added in 2024.[227]
- A 2023 report on the auto industry in Michigan (United States) showed that the electric vehicle transition could create 56,000 jobs by 2030 and that the state could avoid 4,700 health-related deaths by 2050, mainly in low-income communities.[228]
- The US Inflation Reduction Act accelerated investments in electric vehicle charging infrastructure for medium- and heavy-duty trucks: investments were around USD 5 billion per year in 2022 (prior to the Act) then grew rapidly to USD 30 billion in 2024.[229]

US states have continued their ambition on sustainable, low-carbon transport by focusing mainly on cleaner vehicle fleets. California has spearheaded the nationwide transition to zero-emission vehicles, although in May 2025 the US Senate repealed waivers that allow the state to set its own air pollution standards for road vehicles.[230] This poses risks for all clean car, trucks and electric vehicle initiatives within the state and nationwide.

- In 2023, to support its 2050 net zero emission target, Washington state released a Transportation Carbon Reduction Strategy that covers land use strategies, public and active transport, zero-emission vehicles, and low-carbon fuels for efficient passenger and freight transport.[231]
- As of mid-2024, 12 US states (California, Delaware, Maine, Maryland, Massachusetts, New Jersey, New York State, Oregon, Pennsylvania, Rhode Island, Vermont and Washington) intended to ban sales of passenger vehicles with internal combustion engines by 2035 through the Advanced Clean Cars II rule, initiated by California in 2022.[232]
- In 2020, California introduced the Advanced Clean Trucks (ACT) regulation for road freight transport, and as of late

2023 a total of 11 states had adopted the ACT rule.[233]

- California initiated further advances in clean medium- and heavy-duty vehicles in 2023 through the Advanced Clean Fleets regulation, which aimed to require fleet owners operating in the state to transition to zero-emission vehicles.[234] However, California announced in 2025 that it would repeal the regulation after a coalition of 17 states (led by Nebraska, along with trucking associations), successfully filed a lawsuit against it.[235]
- As part of its strategy to achieve carbon neutrality by 2045, California aims to reduce the daily vehicle-kilometres travelled in the state from 39.6 kilometres per person in 2019 to 29.6 kilometres by 2030 (a 25% reduction) and 27.7 kilometres by 2045 (a 30% reduction).[236]
- The Bipartisan Infrastructure Law of 2021 allocated USD 7.5 billion to establish a nationwide network of 500,000 charging stations by 2030; although a federal order in February 2025 halted the funding, individual states may continue to expand the network.[237]

The Trump administration's cancellation of US federal funding for electric vehicle activities will reportedly lead to job losses in the transport sector, including in electric vehicle production, as well as negative health outcomes; however, efforts may continue at the state level. Studies estimate that cancellation of funding from the Inflation Reduction Act could result in a loss of 130,000 jobs across the electric vehicle industry in 2030, compared to a scenario with the Act; without the Act, the job market could be negatively impacted as soon as 2026.[238]

Proposed increases in US import tariffs could have significant impacts on the automobile industry, especially on the electric vehicle industry, although such tariffs are not necessarily new in the region.

- Effective 1 October 2024, Canada imposed a 100% surtax on Chinese-produced electric vehicles to counteract unfair trade practices by China's government, including subsidisation and lax labour and environmental standards.[239]
- In 2024, the United States increased tariffs on imported Chinese electric vehicles from 25% to 100% and raised tariffs on Chinese batteries from 7.5% to 25%.[240]
- In early 2025, the Biden administration banned the import of any cars and trucks made by Chinese companies as part of a strict crackdown on vehicle software and hardware from China.[241]

Major North American airlines took initial steps towards the adoption of sustainable aviation fuel (SAF) in support of their long-term sustainability strategies.

- In November 2023, Virgin Atlantic completed the world's first transatlantic flight powered entirely by SAF on a trip from London's Heathrow airport to New York, demonstrating the feasibility of long-distance flights using 100% SAF.[242]
- In December 2024, Air Canada made its first purchase of SAF, imported from a Finnish company and produced entirely from renewable waste and residue materials, such as used cooking oil and animal fat waste.[243] In 2021, the airline committed to achieve net zero greenhouse gas emissions by 2050.[244]
- US airlines were among the major investors in SAF, although prices remained two to three times higher than those of conventional fuels as of 2024.[245] Four US carriers – American Airlines, Delta Air Lines, Southwest Airlines and United Airlines – ranked in the top six SAF investors among global aviation companies in 2024.[246]

- Between August 2024 and the end of 2024, United Airlines purchased 3.7 million litres of SAF for use at Chicago O'Hare International Airport, the first company to do so at this airport; SAF was expected to account for 3% of the airline's fuel use at O'Hare in the second half of 2024.[247]
- Delta Air Lines reported a four-fold increase in its use of SAF from 2023 to 2024, although no specific volumes were disclosed.[248] In September 2024, the airline opened its first SAF blending facility in the US state of Minnesota, with a future capacity of up to 110 million litres.[249] For the first time, SAF was transported via pipeline to two Delta hubs (Minneapolis–St. Paul International Airport and Detroit Metropolitan Airport) delivering around 30,000 litres for use in aircraft.[250]

Partnerships in action

SLOCAT partners engaged in dozens of actions during 2023-2024, including:

- The non-profit consortium **CALSTART** is advancing clean transport solutions across North America. It administers the New York Truck Voucher Incentive Program, which supports fleet operators in transitioning to cleaner vehicles by reducing the upfront cost of zero-emission trucks and buses up to 80%.[251] As of early 2024, funding caps for several vehicle categories were raised by 50%, with higher incentives introduced for Class 4–8 electric trucks.[252]
- The **Canadian Urban Transit Research & Innovation Consortium** (**CUTRIC**) spearheads industry-academic collaborations to develop low-carbon mobility technologies across Canada. As the federally designated National Planning Service for the Zero Emission Transit Fund, it supports transit agencies in decarbonising their fleets through predictive modelling, infrastructure planning and technology assessments.[253] Its Canadian ZEB Database tracks national progress towards deploying 5,000 zero-emission buses by 2026, with over 5,400 buses at various stages of deployment as of mid-2024.[254]
- The **Institute for Transportation and Development Policy** (**ITDP**) supports sustainable and equitable transport through technical advocacy, policy reform and strategic partnerships. Its US programme focuses on transformative transport systems in major cities like Boston and Los Angeles.[255] ITDP promotes the Gold Standard Bus Rapid Transit in Boston and advocates for people-centred streets, connected cycling infrastructure, and improved bus services in underserved areas in Los Angeles.[256]
- The **Institute of Transportation Studies at the University of California, Davis** (**ITS-Davis**) is a leading research centre advancing sustainable and low-carbon transport. It houses the Plug-in Hybrid & Electric Vehicle Research Center, which informs the design of zero-emission vehicle policies, and the 3 Revolutions Future Mobility Program, which explores how automation, shared mobility and electrification can serve the public good.[257]
- The **Shared Mobility 2030 Action Agenda**, convened by the Shared-Use Mobility Center, is a collaborative initiative aimed at making shared mobility (such as public transit, on-demand shuttles, ride-hailing, carpooling and micromobility options) the preferred choice over private car ownership by 2030.[258] It outlines actionable steps to enhance the reliability, accessibility, and sustainability of shared transport modes, and emphasises cross-sectoral collaboration among 70 organisations.[259]
- The **Urban Sustainability Directors Network** (**USDN**) supports US local governments in advancing equitable and sustainable urban development. In 2023, USDN supported a federally funded USD 61 million project to improve access across I-10, a major interstate highway that has long divided historically disadvantaged communities.[260] The initiative seeks to create safer walking and cycling routes, reconnect neighbourhoods, and expand access to employment, retail and essential services.[261]
- The **Electric School Bus Initiative** is a partnership between the World Resources Institute and the Bezos Earth Fund aimed at equitably transitioning the entire US school bus fleet to electric vehicles by 2030, bringing health, climate and economic benefits to children and families.[262] As of October 2024, the Initiative was providing technical assistance in 11 US states.[263]

MODULE 3 | 3.6

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Oceania Regional Overview

DEMOGRAPHICS, TRANSPORT AND SUSTAINABILITY DATA

Indicators	Oceania	Global
Population size (2023)	444 million	8,000 million
Population growth (2015-2023)	12.8%	8.5%
Urban population share (2023)	66.2%	57%
Urban population growth (2015-2023)	11.7%	16%
GDP per capita (2023)	USD 42,456 (constant 2015 USD)	USD 11,337 (constant 2015 USD)
GDP growth (2015-2023)	20.9%	22.8%
Share of women employed in transport and storage (2023)	24.4%	15.6%
Motorisation rate (2022)	586.7 vehicles per 1,000 people	218.7 vehicles per 1,000 people
Share of urban population with convenient access to public transport (2020)	41.3%	52%
Share of rural population with access to all-weather primary and secondary roads (2020)	No data	38%
Transport total GHG emissions (2023)	119 million tonnes CO_2eq	7,123 million tonnes CO_2eq
Per capita transport GHG emissions (2023)	2.7 tonnes CO_2eq	0.89 tonnes CO_2eq
Fossil fuel subsidies (explicit and implicit) (2023)	USD 1,037 per capita (constant 2021 USD)	USD 813 per capita (constant 2021 USD)
Share of renewable energy sources in transport (2023)	No information	4.6%
Carbon intensity of electricity generation (2023)	478.9 gCO_2/kWh	417 gCO_2/kWh
Transport contribution to air pollution (2019)	2%	6%
Premature deaths attributable to air pollution by transport (2019)	0.3 per 100,000 people	2.3 per 100,000 people
Road casualties (2021)	4.9 per 100,000 people	15 per 100,000 people

Source: See endnote 1 for this section.

KEY FINDINGS

Demand, use and access

- Across Oceania countries, the average share of the urban population with convenient access to public transport was 41.3% in 2020, below the world average of 52%. However, this figure masks sharp contrasts across countries.
- The average share of people living near protected bikeways in 2023 was 34% in Australia and 17% in New Zealand, whereas data for Pacific SIDS were not readily available.
- Freight activity across the region has increased, albeit to varying extents.
- Passenger transport activity in Australia reached 434.6 billion passenger-kilometres in 2023, on par with the 2015 level of 434.5 billion passenger-kilometres.
- Due to its geography, Oceania remains highly dependent on air transport (domestic, regional and international) for its socio-economic development, connectivity and competitiveness.
- Maritime transport plays a critical role in meeting socio-economic and connectivity needs in Oceania, especially in Pacific SIDS where many dispersed small islands have limited or no land-based alternatives for transporting goods and people. Although shipping connectivity in the region has improved, this trend is not shared evenly among countries.
- In 2022, Oceania had a motorisation rate (covering four-wheeled motor vehicles) of 586.7 vehicles per 1,000 people. This represents an increase from 544 vehicles per 1,000 people during the 2016-2020 period and is well above the world average of 218.6 vehicles per 1,000 people in 2022.
- The region's motorisation landscape varies greatly by country. Despite well-developed public transport networks, New Zealand and Australia have the highest motorisation rates in the world, at 850.4 and 753.4 vehicles per 1,000 people, respectively, in 2022.
- The COVID-19 pandemic had profound impacts on public transport ridership across Oceania, especially in New Zealand and Australia, which have the region's most developed networks.
- Oceania's electric vehicle market remains in its early stages and continues to lag behind other world regions, although momentum has increased, with electric car sales reaching a double-digit share of new car sales in 2024.
- As of 2022, the share of renewable energy used in transport across the region was low, at only 2.2% in Australia and 0.4% in New Zealand.
- Despite some improvement since 2015, Oceania had the second highest carbon intensity of electricity generation globally in 2023 – at 478.9 grams of CO_2 equivalent per kilowatt-hour (kWh) – and was surpassed only by Asia (559.5 grams of CO_2 equivalent per kWh).

KEY FINDINGS

Sustainability and climate trends

- Oceania has the lowest transport greenhouse gas emissions among regions globally, contributing 119 million tonnes of CO_2 equivalent in 2023 and accounting for 1.7% of global transport emissions (excluding international aviation and shipping). These emissions are very unevenly distributed, with the bulk occurring in Australia and New Zealand. For many of Oceania's island states (Cook Islands, Fiji, Kiribati, Palau, Papua New Guinea, Samoa, Solomon Islands and Tonga), transport is the largest source of greenhouse gas emissions.
- Oceania's per capita transport greenhouse gas emissions, at 2.7 tonnes of CO_2 equivalent, were well above the global average of 0.9 tonnes and the second highest after North America in 2023.
- Despite Oceania's relatively small contribution to global transport greenhouse gas emissions, emissions within the region have grown steadily in recent decades, with only a brief decline in 2020 during the COVID-19 pandemic.
- Passenger cars continued to account for the majority of total transport emissions in the region.
- Heavy-duty vehicles, primarily trucks, have tended to dominate freight transport operations and emissions in Oceania. Freight emissions have continued to increase, with emissions from road freight in particular rising 17% between 2015 and 2024.
- The average energy efficiency of new light-duty vehicles sold in Australia and New Zealand in 2021 was around 6.7 litres per 100 kilometres (150 grams of CO_2 per kilometre), trailing other high-income countries and regions such as the European Union, Japan and the United States. Both Australia and New Zealand have targets to achieve emission levels of 58-59 grams CO_2 per kilometre for new vehicles by 2029.
- Car commuters in cities across Australia and New Zealand experienced significant delays due to traffic congestion in 2024, with the highest delays in Brisbane (84 hours annually), Melbourne (65 hours) and Auckland (63 hours).
- Other forms of transport – such as aviation, shipping and rail – contributed relatively low shares of transport emissions in Australia and New Zealand in 2019-2023.
- In Oceania, the transport sector contributes much less to health-damaging air pollution than in other regions, accounting for 2% of air pollutant emissions and 0.3 premature deaths per 100,000 people in 2019. The region's road casualties were below the global average in 2021, with 4.9 deaths per 100,000 people compared to 15 deaths per 100,000 people globally.
- Oceania is one of the most vulnerable regions to the impacts of climate change. Many Pacific SIDS are located in the world's most disaster-prone areas, and with their small economies they can incur GDP losses of up to 200% from a single climate-exacerbated disaster, threatening lives, transport infrastructure, connectivity, livelihoods and development.

KEY FINDINGS

Policy and investment developments

- In recent years, very few national strategies have been released in Oceania that support a transition towards sustainable, zero-emission transport; however, examples exist in Australia and New Zealand. Notably, New Zealand's Decarbonising Transport Action Plan (2022-2025) aims to pursue transport emission reduction interventions that simultaneously enhance resilience to natural hazards while delivering benefits for biodiversity and air quality.
- As of 25 May 2025, only two countries in Oceania – New Zealand and Marshall Islands – had submitted to the United Nations Framework Convention on Climate Change (UNFCCC) their third-generation Nationally Determined Contributions (NDCs) towards reducing emissions under the Paris Agreement.
- Among the seven countries in the region that submitted Long-Term Low Emission Development Strategies (LT-LEDS) as of 25 May 2025, only Australia, New Zealand, Solomon Islands and Vanuatu included national targets to reduce transport-related greenhouse emissions.
- Transport adaptation and resilience actions in the region's NDCs focus mainly on road transport and port infrastructure and fall short in devising tailored actions for specific transport modes or contexts.
- Five island states in Oceania – Fiji, Kiribati, Marshall Islands, Papua New Guinea and Tonga – had submitted National Adaptation Plans (NAPs) to the UNFCCC as of 25 May 2025.
- Countries in the region, including several SIDS notably Fiji, Kiribati, Tuvalu, have made increasing investments towards enhancing transport resilience.
- In 2023, countries in Oceania provided fossil fuel subsidies totalling USD 1,037 per capita – the third highest levels after North America (USD 2,172 per capita) and Europe (USD 1,265 per capita) – incentivising fossil fuel use and contributing to rising emissions.

KEY FINDINGS

- Fossil fuel subsidies in Oceania are projected to increase around 26% between 2023 and 2030, further undermining climate and sustainability efforts globally. Fossil fuel subsidies as a share of GDP ranged from 1% in Papua New Guinea to 1.8% in New Zealand, 2.4% in Australia, 6.5% in Fiji and 6.6% in Tonga in 2023.
- Countries across Oceania have adopted various measures to support people in choosing active, shared, and public transport, and have also supported closer integration between urban mobility and land use planning.
- Australia and New Zealand have increasingly adopted dedicated policies and targets to promote the electrification of transport, including at the sub-national level.
- The region's SIDS have pursued vehicle electrification, although progress has been slower than in Australia and New Zealand.
- A growing number of countries in the region have pursued efforts to increase the use of renewable energy in transport.
- Pacific SIDS have taken steps to address the emissions from maritime shipping, both at the global level and domestically.
- A growing number of countries in Oceania have implemented green shipping corridors to decarbonise maritime transport.
- Countries in the region have shown strong interest in advancing low-carbon maritime transport through electrification, biofuels and other alternative low-carbon fuels.
- To decarbonise its freight transport sector, New Zealand has set two related targets: to reduce emissions from freight 35% below 2019 levels by 2035, and to reduce the emissions intensity of transport fuel by 10%.
- New Zealand provides grants to support the uptake of low- and zero-emission trucks.
- Australia has explored deploying electric trucks for urban deliveries, and hydrogen as a solution for longer-haul road freight transport.
- Australia is expanding and modernising its rail infrastructure for freight, inter-city passenger and urban transport. High-speed rail is a key element in the country's strategy to achieve net zero emissions by 2050.
- In 2023, Australia launched a comprehensive review of its National Freight and Supply Chain Strategy dating from 2019, which resulted in the release of the strategy's Review Report in 2024.
- To enhance transport connectivity, Pacific SIDS have emphasised the improvement of rural access.

Context, challenges and opportunities

Oceania comprises the large economies of Australia and New Zealand along with diverse small island developing states (SIDS) in the Pacific Ocean, presenting a complex and varied transport landscape. With a total population of 444 million, or just 0.55% of the global population, Oceania has the lowest transport greenhouse gas emissions among all regions globally, contributing 119 million tonnes of carbon dioxide (CO_2) equivalent in 2023.[2] This accounted for 1.7% of total global transport emissions (excluding international aviation and shipping).[3]

Access to transport is a key enabler of socio-economic opportunities. However, in Oceania less than half (41.3%) of the urban population had convenient access to public transport in 2020, below the global average of 52%.[4] Australia and New Zealand have well-developed transport systems with high motorisation rates and significant freight activity, whereas the region's SIDS have lower motorisation rates and rely heavily on maritime and air transport to meet their transport needs.

Emissions in Oceania have grown steadily over the past decade, declining only briefly due to the COVID-19 pandemic in 2020. The distribution of transport emissions remains highly uneven across the region, with Australia and New Zealand accounting for the vast majority, and Kiribati and the Cook Islands being the lowest emitters. The COVID-19 pandemic, which triggered the collapse of transport activity and tourism, highlighted the profound socio-economic challenges facing the region. This underscores the need to pursue climate change mitigation and adaptation efforts in parallel with socio-economic development.

Despite their relatively small contribution to climate change, Pacific SIDS are particularly vulnerable to the impacts of climate change because of their unique geography and environment, the fragility of their economic systems and their distinctive demographics. As a result, SIDS experience annual losses from natural disasters and climate-exacerbated events that amount to between 1% and 9% of their gross domestic product (GDP).[5] Sustained economic growth has remained a challenge in Pacific SIDS due to heavy reliance on a narrow range of industries and exports, associated with high transport costs and tight government budgets. These structural vulnerabilities, coupled with limited technical and financial capacities, leave SIDS particularly exposed to external shocks such as climate change, pandemics and geopolitical conflicts.

Although recent comprehensive data from the Rural Access Index (RAI) are not available for Oceania, the region scores below the world average on rural populations' access to all-weather roads and therefore under-performs in achieving Sustainable Development Goal (SDG) 9.2 on rural access. Australia and New Zealand have more developed rural infrastructure, whereas Pacific SIDS have lower RAI scores, reflecting limited infrastructure and challenging geographical conditions that hinder rural accessibility.[6]

Among global regions, Oceania had the third largest share of women employed in transport and storage in 2023, at 24.4% (although this has not changed since 2014), well above the global average of 15.6%.[7]

Mirroring its relatively low climate footprint, Oceania's transport sector contributes much less health-damaging air pollution than the global average, accounting for 2% of the region's air pollutant emissions and 0.3 premature deaths per 100,000 people in 2019.[8] Similarly, Oceania observed the lowest per capita road casualties (4.9 deaths per 100,000 people) among regions, at less than a third of the global average (15 deaths per 100,000 people) in 2021.[9]

Demand, use and access

Across Oceania countries, the average share of the urban population with convenient access to public transport was 41.3% in 2020, below the world average of 52%.[10] **However, this figure masks sharp contrasts across countries.** Whereas 94.4% of urban residents in New Zealand and 84.4% in Australia enjoyed convenient access to public transport in 2020, only 7.1% of urban residents in the Solomon Islands had such access (Figure 1).[11]

The average share of people living near protected bikeways in 2023 was 34% in Australia and 17% in New Zealand, whereas data for Pacific SIDS were not readily available.[12] Regionally, Point Cook in the Wyndham Vale area (Australia) had the highest share (68%) of people living within 300 metres' walking distance of a physically protected bikeway, a key parameter in encouraging people to use cycling.[13]

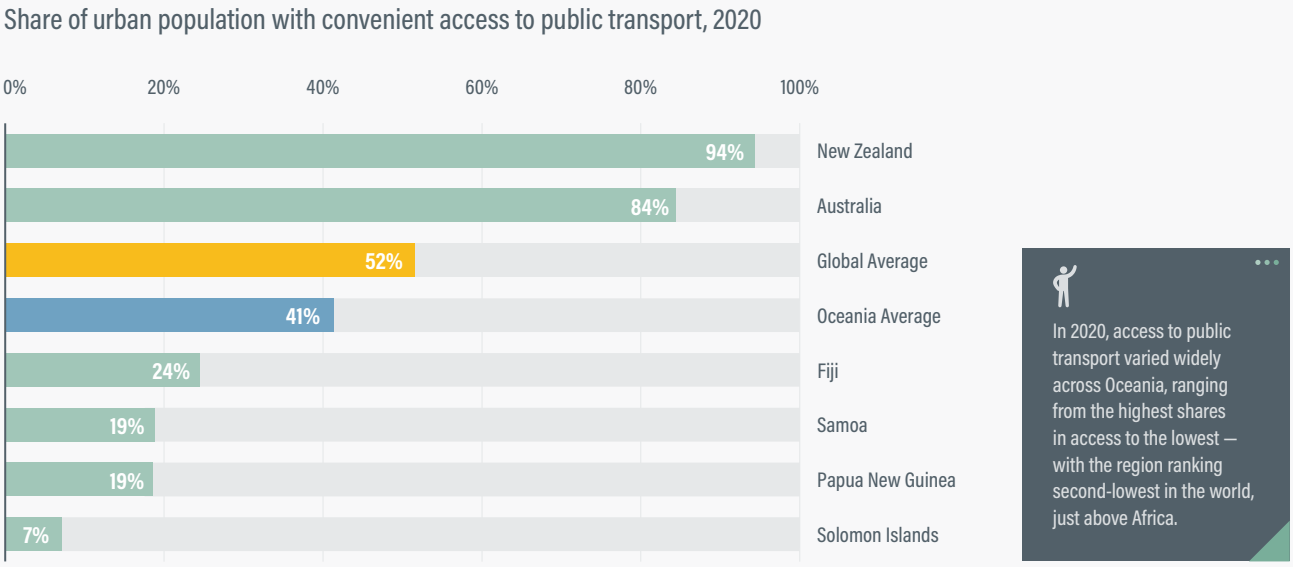
Freight activity across the region has increased, albeit to varying extents. Australia's domestic freight activity – dominated by road and rail – has grown strongly over the last 30 years.[14] Although it fell slightly during the pandemic – dropping from a peak of 780 billion tonne-kilometres in 2018-19 to 759.7 billion tonne-kilometres in 2020-21 – it has since rebounded, reaching its second highest level at 778.7 billion tonne-kilometres in 2022-23.[15] Australia's urban freight volumes alone are projected to increase 60% to 2040, putting growing pressure on freight networks.[16] In New Zealand, freight volumes are expected to rise 55% from 237 million tonnes in 2012-13 to 366 million tonnes in 2042-43.[17]

Passenger transport activity in Australia reached 434.6 billion passenger-kilometres in 2023, on par with the 2015 level of 434.5 billion passenger-kilometres.[18] Passenger cars dominated in the country, with 63.6% of travel activity (276.2 billion passenger-kilometres), followed distantly by air transport (17.1%, or 51.7 billion passenger-kilometres) and buses and railways (around 4% each, or 17.2 billion and 15.2 billion passenger-kilometres, respectively).[19] In New Zealand, 80% of household trips were undertaken as a car driver or passenger in 2012-13 (most recent data).[20] Reliable regional data on passenger transport activity are lacking.

Due to its geography, Oceania remains highly dependent on air transport (domestic, regional and international) for its socio-economic development, connectivity and competitiveness. In 2023, the Asia-Pacific region (which includes Oceania) accounted for 34.7% of global passenger air travel; this market employed 42 million people in the region and contributed USD 890 billion to the GDP.[21] Across Oceania, the recovery of air traffic in the wake of the COVID-19 pandemic has been varied.

- Air connectivity in the Asia-Pacific region (measured as the number of flights per 1,000 people) has grown from an average of 1.0 in 2000 to 2.9 in 2019, although it dropped

FIGURE 1. Share of urban population with convenient access to public transport in Oceania, 2020



Source: See endnote 11 for this section.

to 1.8 in 2021 due to the effects of COVID-19.[22]

- In 2024, air traffic in Australia and New Zealand rebounded robustly across both international and domestic travel as well as the leisure and business sectors, driven by the reopening of borders and increased travel demand.[23]
- In Pacific SIDS, the number of registered carrier departures per 1,000 people declined steadily from 1990 to 2021, indicating a deterioration in aviation connectivity.[24]

Maritime transport plays a critical role in meeting socio-economic and connectivity needs in Oceania, especially in Pacific SIDS where many dispersed small islands have limited or no land-based alternatives for transporting goods and people. Although shipping connectivity in the region has improved, this trend is not shared evenly among countries. The collapse of tourism in the early years of the COVID-19 pandemic had devastating impacts on the already vulnerable economies of Pacific SIDS (such as Fiji, Palau, Samoa and Tonga), where passenger maritime transport fell 18% in the first half of 2020.[25] Inefficient ports are a key obstacle to trade expansion, impeding socio-economic development.[26]

- Since 2015, shipping connectivity in Oceania has improved steadily, with Micronesia registering a more than 50% improvement in its score on the Liner Shipping Connectivity Index[i] (LSCI).[27]
- The LSCI scores of Pacific SIDS, ranging from 4 to 50, have remained much lower than in the broader Asia-Pacific region.[28]
- Pacific islands rank poorly in the Container Port Performance Index[ii], with Papua New Guinea's Port Moresby ranking the highest among them at 289th place in 2023.[29]

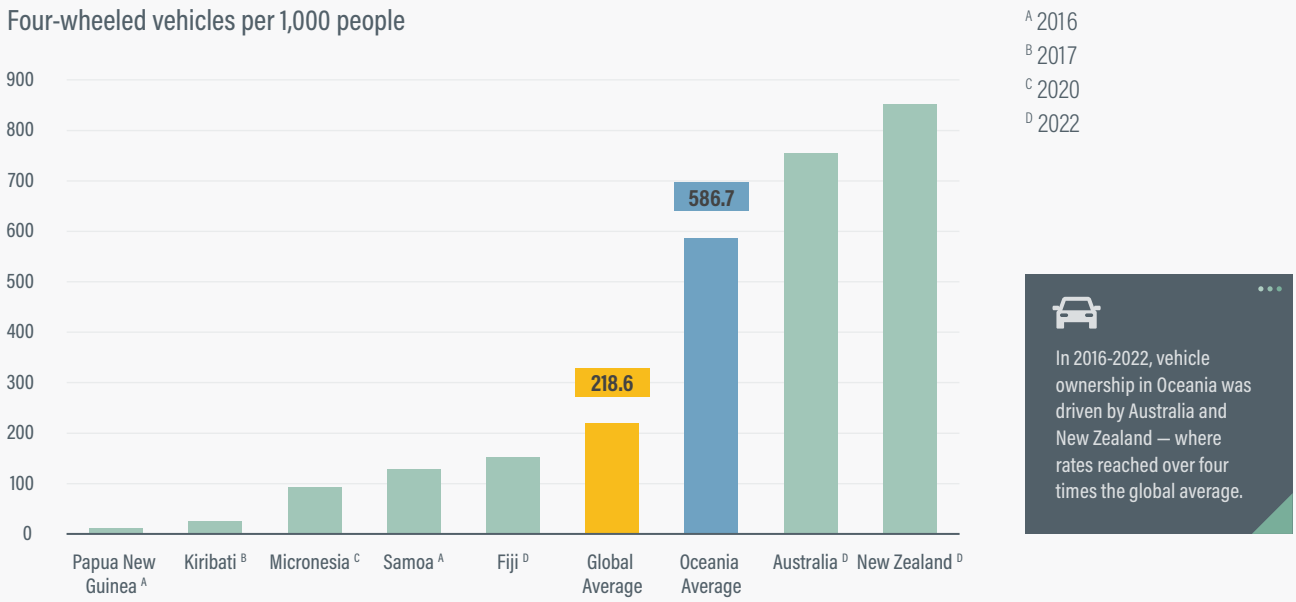
In 2022, Oceania had a motorisation rate (covering four-wheeled motor vehicles) of 586.7 vehicles per 1,000 people (Figure 2).[30] **This represents an increase from 544 vehicles per 1,000 people during the 2016-2020 period and is well above the world average of 218.6 vehicles per 1,000 people in 2022.**[31] Oceania's motorisation rate is comparable to that in Europe (588.5 vehicles per 1,000 people in 2024) and much higher than in Asia (140.4 vehicles per 1,000 people in 2022).[32]

The region's motorisation landscape varies greatly by country, with New Zealand and Australia the highest motorisation rates in the world, at (850.4 and 753.4 vehicles per 1,000 people, respectively, in 2022).[33] In contrast, the

i The Liner Shipping Connectivity Index (LSCI) is a comprehensive tool for quantifying a nation's integration into the global maritime network. By aggregating data on ship call frequency, container capacity, service regularity, shipping carrier diversity, largest ship size, and network reach, the LSCI provides a standardised metric to assess a country's access to and efficiency within international liner shipping.

ii The Container Port Performance Index is a benchmarking tool created by the World Bank and S&P Global Market Intelligence to analyse port efficiency and provide essential insights into international shipping connectivity.

FIGURE 2. Motorisation rates per 1,000 people in Oceania, various years



Source: See endnote 30 for this section.

world's lowest motorisation rates globally are in Papua New Guinea (12.3 vehicles per 1,000 inhabitants in 2016) and Kiribati (25.3 vehicles per 1,000 inhabitants in 2017).[34] In many Pacific SIDS, the limited access to transport services in urban and rural areas has led to the expansion of road infrastructure, contributing to rising motorisation.[35] Given the high numbers of unregistered vehicles across SIDS, precise data on vehicle stocks and use are limited.

The COVID-19 pandemic had profound impacts on public transport ridership across Oceania, especially in New Zealand and Australia, which have the region's most developed networks. In New Zealand, public transport ridership fell 23% between 2018-19 and 2022-23, and passenger numbers have only recently neared pre-COVID levels.[36] Australia's public transport activity incurred a similar dip but has also shown signs of recovery, with ridership on buses increasing 38.7% in 2023 and on railways increasing 61%.[37]

Oceania's electric vehicle market remains in its early stages and continues to lag behind other world regions, although momentum has increased, with electric car sales reaching a double-digit share of new car sales in 2024.[38] In New Zealand, electric vehicle uptake has increased considerably due to a government rebate scheme, a broader range of electrified offerings and competitive pricing for entry-level models. Although data remain limited, Pacific Island countries hold significant potential for the adoption of small electric vehicles (e.g., two-wheelers and compact cars) for short- to medium-distance travel, and for the piloting of electric minibuses and larger buses in island cities.[39]

- In Australia, around 250,000 battery-electric passenger cars were on the roads in 2024 – a 15-fold increase since 2020 – although electric vehicles still represented only 1.9% of the total car fleet.[40]
- In 2024, electric vehicles accounted for 13% of all new cars purchased in Australia (around 21,000 battery-electric vehicles) and for around 2.5% of motorised two- and three-wheelers; no data were available for buses, trucks and vans.[41]
- Electric vehicles accounted for 3.3% of New Zealand's car fleet in 2024 (with a total of 78,000 battery-electric cars on the road) and for 11% (around 21,000 units) of all new car sales.[42]
- Electric drivetrains covered 1.3% of New Zealand's motorised two- and three-wheelers, 1% of buses and 0.3% of vans in 2024.[43] Zero-emission heavy-duty vehicles made up less than 0.13% of the country's heavy truck fleet in 2024.[44]

As of 2022, the share of renewable energy used in transport across the region was low, at only 2.2% in Australia and 0.4% in New Zealand.[45] Although Pacific SIDS have actively pursued the uptake of renewables (particularly in electricity and transport) to reduce their reliance on fossil fuel imports and boost their energy security, the integration of renewables in transport remains scarce, and comprehensive data are limited.

Despite some improvement since 2015, Oceania had the second highest carbon intensity of electricity generation globally in 2023 – at 478.9 grams of CO_2 equivalent per kilowatt-hour (kWh) – and was surpassed only by Asia (559.5 grams of CO_2 equivalent per kWh).[46]

Sustainability and climate trends

Oceania has the lowest transport greenhouse gas emissions among regions globally, contributing 119 million tonnes of CO_2 equivalent in 2023 and accounting for 1.7% of global transport emissions (excluding international aviation and shipping).[47] **These emissions are very unevenly distributed, with the bulk occurring in Australia and New Zealand. For many of Oceania's island states (Cook Islands, Fiji, Kiribati, Palau, Papua New Guinea, Samoa, Solomon Islands and Tonga), transport is the largest source of greenhouse gas emissions.**[48]

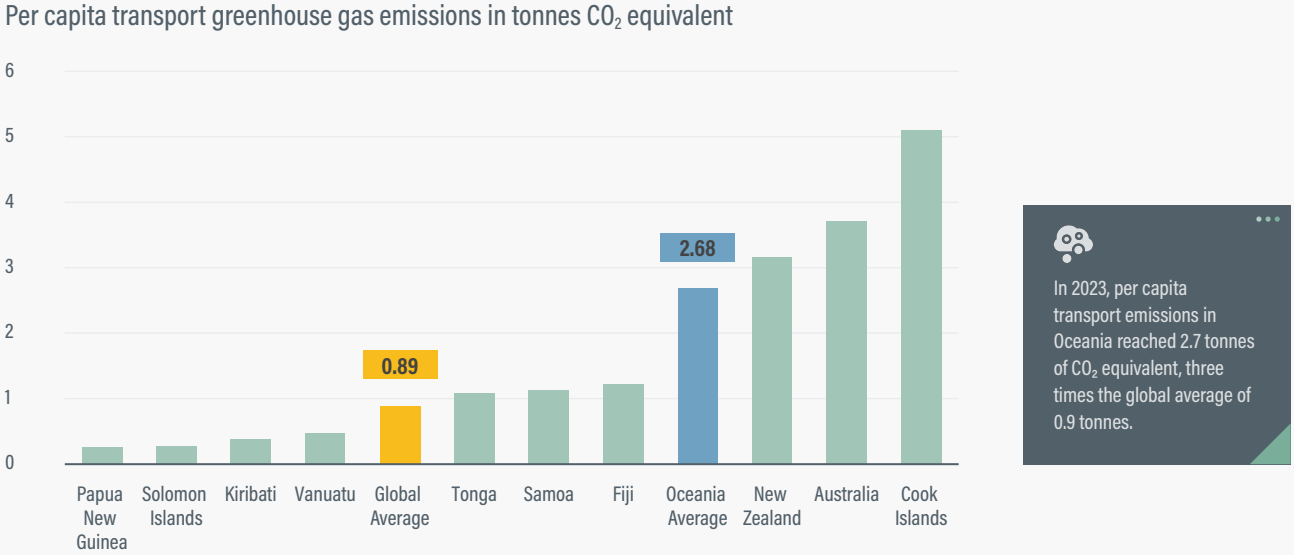
- Australia accounted for the vast majority of the region's transport greenhouse gas emissions (97.5 million tonnes), followed by New Zealand (16.2 million tonnes) and, more distantly, Papua New Guinea (2.6 million tonnes).[49]
- The region's lowest transport emitters were Kiribati (0.05 million tonnes) and the Cook Islands (0.07 million tonnes).[50]

Oceania's per capita transport greenhouse gas emissions, at 2.7 tonnes of CO_2 equivalent, were well above the global average of 0.9 tonnes and the second highest after North America in 2023.[51] By comparison, Asia's per capita transport greenhouse gas emissions were 0.6 tonnes in 2023, and Europe's were 1.66 tonnes; only North America had higher per capita transport emissions at 5 tonnes.[52] In 2023, Oceania's highest per capita transport emissions were in the Cook Islands (5.1 tonnes) and Australia (3.7 tonnes), and the lowest were in Papua New Guinea and the Solomon Islands (both around 0.3 tonnes) (Figure 3).[53]

Despite Oceania's relatively small contribution to global transport greenhouse gas emissions, emissions within the region have grown steadily in recent decades, with only a brief decline in 2020 during the COVID-19 pandemic.

- In 2023, Australia's transport greenhouse gas emissions increased 7.2% (a surplus of 6.6 million tonnes of CO_2 equivalent), reflecting a return to pre-COVID-19 transport activity levels, driven mainly by the rise in passenger

FIGURE 3. Per capita transport greenhouse gas emissions in Oceania, 2023



Source: See endnote 53 for this section.

vehicle use, air travel and diesel use in heavy transport.[54]

- In New Zealand, the transport sector emitted 16.2 million tonnes of CO_2 equivalent in 2023, accounting for 19% of the country's total greenhouse gas emissions.[55]
- Transport greenhouse gas emissions in New Zealand grew 7% from 2022 to 2023 and 11% from 2015 to 2023.[56]

Passenger cars continued to account for the majority of total transport emissions in the region. In Australia, light-duty vehicles (including passenger and light commercial vehicles) contributed 59.7% of transport emissions in 2023, whereas trucks and buses contributed 23.4%.[57] Similarly, the bulk of New Zealand's transport emissions (65.1%) in 2019 came from light-duty vehicles such as cars.[58]

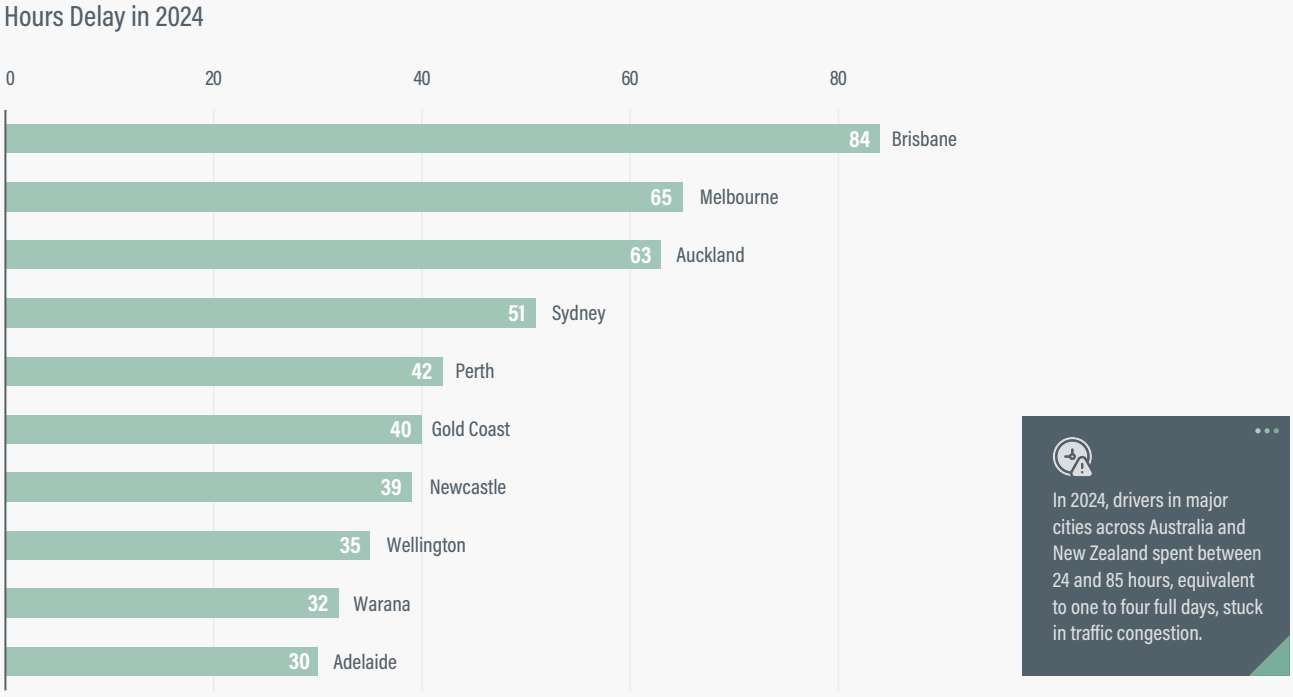
Heavy-duty vehicles, primarily trucks, have tended to dominate freight transport operations and emissions in Oceania. Freight emissions have continued to increase, with emissions from road freight in particular rising 17% between 2015 and 2024.[59] However, the emissions contribution of different freight transport modes is not necessarily equivalent to their total share in freight operations.

- In New Zealand, trucks carried 93% of total freight volumes in 2019 and were the second largest source of transport emissions, at 24.4%.[60]
- Heavy-duty vehicles were responsible for 86% of Australia's freight emissions in 2023-24, while making up 31% of total freight activity.[61]
- Railways are Australia's main mode for transporting bulk goods (such as coal and iron), accounting for 57% of total freight activity in 2023-24, yet their share of emissions remained low at 11%.[62]

The average energy efficiency of new light-duty vehicles sold in Australia and New Zealand in 2021 was around 6.7 litres per 100 kilometres (150 grams of CO_2 per kilometre), trailing other high-income countries and regions such as the European Union, Japan and the United States.[63] **Both Australia and New Zealand have targets to achieve emission levels of 58-59 grams CO_2 per kilometre for new vehicles by 2029.**[64]

Car commuters in cities across Australia and New Zealand experienced significant delays due to traffic congestion in 2024, with the highest delays in Brisbane (84 hours annually), Melbourne (65 hours) and Auckland (63 hours) (Figure 4).[65] The combination of population growth,

FIGURE 4. Average annual hours of traffic delay in major Oceanic cities, 2024



In 2024, drivers in major cities across Australia and New Zealand spent between 24 and 85 hours, equivalent to one to four full days, stuck in traffic congestion.

Source: See endnote 65 for this section.

dispersed land use patterns, and rising vehicle ownership has contributed to growing road congestion in the region, leading to delays, added economic costs, decreased productivity and environmental damage.

Other forms of transport – such as aviation, shipping and rail – contributed relatively low shares of transport emissions in Australia and New Zealand in 2019-2023. In Australia, domestic aviation accounted for 9% of transport emissions and 1.6% of total national emissions, while domestic maritime transport accounted for 2.2% of transport emissions and 0.4% of total national emissions.[66] Railways contributed 3.5% of Australia's transport emissions.[67] In New Zealand, domestic aviation and maritime emissions together accounted for 9.3% of the country's transport greenhouse gas emissions in 2019.[68]

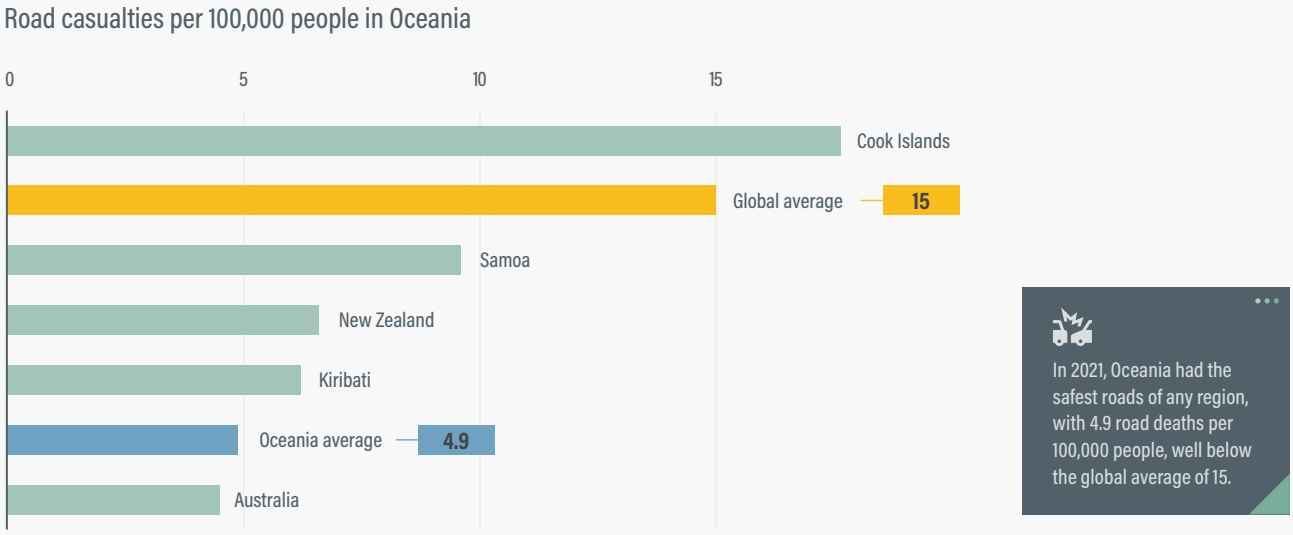
In Oceania, the transport sector contributes much less to health-damaging air pollution than in other regions, accounting for 2% of air pollutant emissions and 0.3 premature deaths per 100,000 people in 2019.[69] The region's road casualties were below the global average in 2021, with 4.9 deaths per 100,000 people compared to 15 deaths per 100,000 people globally (Figure 5).[70]

- Road traffic deaths in 2021 totalled 4.5 fatalities per 100,000 people in Australia, 6.21 in Kiribati, 6.6 in New Zealand, 9.6 in Samoa and 17.6 in Cook Islands.
- the share of assessed roads in Oceania designated as three-star or above was only 18% for pedestrians, 25% for bicyclists, and 32% for motorcyclists, highlighting the urgent need for infrastructure upgrades across the region.[71]

Oceania is one of the most vulnerable regions to the impacts of climate change. Many Pacific SIDS are located in the world's most natural disaster-prone areas, and with their small economies they can incur GDP losses of up to 200% from a single climate-exacerbated disaster, threatening lives, transport infrastructure, connectivity, livelihoods and development.[72] Natural hazards – such as earthquakes, floods and landslides – as well as climate change-induced impacts such as sea-level rise and more-frequent and more intense extreme weather events, can greatly disrupt transport networks and damage infrastructure.

- Globally, SIDS make up two-thirds of the countries that suffer the highest relative losses from natural disasters – between 1% and 9% of their GDP each year.[73]
- In Fiji, transport damage from flooding in 2009 totalled USD 28.5 million (43% of total infrastructure damage), and transport damage from Cyclone Winston in 2016 totalled USD 63 million (61% total infrastructure damage).[74] Cyclone Yasa in 2020 led to significant infrastructure damage across Fiji.[75]
- The Solomon Islands faced USD 12 million in transport damage from flooding in 2014, making up 90% of the country's total infrastructure damage.[76]

FIGURE 5. Road casualties per 100,000 people in Oceania, 2021



Source: See endnote 70 for this section.

Policy and investment developments

In recent years, very few national strategies have been released in Oceania that support a transition towards sustainable, zero-emission transport; however, examples exist in Australia and New Zealand. Notably, New Zealand's Decarbonising Transport Action Plan (2022-2025) aims to pursue transport emission reduction interventions that simultaneously enhance resilience to natural hazards while delivering benefits for biodiversity and air quality.[77]

- In New Zealand's Decarbonising Transport plan, interventions include creating green spaces and ecological corridors as part of new and improved transport infrastructure and services.[78] Drawing on the Avoid-Shift-Improve (A-S-I) Framework[iii], the Plan prioritises three focus areas: reducing reliance on cars and encouraging active and public transport, promoting wider uptake of electric mobility and deepening efforts to decarbonise heavy transport and freight.[79] The plan sets some concrete targets including reducing the vehicle-kilometres travelled by light-duty vehicles 20% by 2035 through improved urban form and the provision of better travel options.[80]
- Following consultations in 2024, the Australian government has been finalising its Transport and Infrastructure Net Zero Roadmap and Action Plan, which outlines net zero pathways for each transport mode (light-duty and heavy-duty road vehicles, rail, maritime and aviation) and contains specific time frames for 2030, 2040 and 2050.[81]

As of 25 May 2025, only two countries in Oceania – New Zealand and Marshall Islands – had submitted to the United Nations Framework Convention on Climate Change (UNFCCC) their third-generation Nationally Determined Contributions[iv] (NDCs) towards reducing emissions under the Paris Agreement.[82] Although both countries' NDCs include transport-related content, neither establishes transport-specific activities on adaptation. Marshall Islands' NDC, published in 2025, refers directly to the outcomes of the First Global Stocktake adopted at the 2023 United Nations Climate Change Conference (COP 28), committing the country to accelerate emission reductions from road transport through pathways such as infrastructure development and rapid deployment of zero- and low-emission vehicles. The NDC also features a target to reduce domestic shipping emissions 40% below 2010 by 2030 and achieve complete decarbonisation by 2050.[83]

For the latest analysis of transport commitments in NDCs, including those expected ahead of COP 30, see the NDC Transport Tracker by GIZ and SLOCAT*, a database on ambition, targets and policies in NDCs and Long-Term Strategies.*[84]

Among the seven countries in the region that submitted Long-Term Low Emission Development Strategies (LT-LEDS) as of 25 May 2025, only Australia, New Zealand, Solomon Islands and Vanuatu included national targets to reduce transport-related greenhouse emissions.[85] LT-LEDS complement NDCs and reflect countries' strategies to 2050 and beyond.

- In its Net Zero Plan of 2021, Australia set a target to reduce its economy-wide emissions 43% below 2005 levels by 2030, with a view to achieving net zero emissions by 2050.[86] The country's updated LT-LEDS from 2023 reaffirms the 2050 net zero objective across all transport modes.[87]
- New Zealand's LT-LEDS of 2021 commits to achieving net zero emissions for transport by 2050 while building a healthy, safe, equitable and accessible transport system.[88] This requires reducing the country's transport emissions 41% by 2035 compared to 2019 levels, according to pathways modelled by the Climate Change Commission.[89]
- In 2023, Vanuatu published an LT-LEDS with a target to reduce transport emissions 50% below business as usual by 2050, and Solomon Islands released an LT-LEDS with a dedicated transport section but without specific ambitions for reducing emissions from the sector.[90]

Transport adaptation and resilience actions in the region's NDCs focus mainly on road transport and port infrastructure and fall short in devising tailored actions for specific transport modes or contexts. As of 25 May 2025, Micronesia and Papua New Guinea were the only two countries in Oceania to feature transport adaptation targets in their second-generation NDCs.

- Micronesia's NDC, published in 2022, aims to climate-proof all major island ring roads, airport access roads, and arterial roads, as well as major ports, by 2030.[91]
- In its NDC, Papua New Guinea has committed to building and rehabilitating USD 1.2 billion worth of transport (air, sea, and land) infrastructure in line with climate-resilient codes and standards.[92]
- Australia's NDC of 2022 sets out to ensure that the country is disaster-proof by spending up to USD 200 million annually on disaster preparation and resilience projects.[93]

iii The Avoid-Shift-Improve (A-S-I) framework seeks to guarantee access to transport and mobility while prioritising policy measures that "*Avoid*" unnecessary motorised trips based on proximity and accessibility; "*Shift*" to less carbon-intensive modes (e.g., from private vehicles to public transport, shared and active mobility, etc.); and "*Improve*" vehicle design, energy efficiency and clean energy sources for different types of freight and passenger vehicles. Growing evidence shows that "*Avoid*" and "*Shift*" strategies can account for 40-60% of transport emission reductions, at lower costs than "*Improve*" strategies.

iv Every NDC submitted since November 2024 is regarded as a 3.0/third-generation NDC, regardless of the document title, version number or content.

Five island states in Oceania – Fiji, Kiribati, Marshall Islands, Papua New Guinea and Tonga – had submitted National Adaptation Plans (NAPs) to the UNFCCC as of 25 May 2025.[94] All of these contain transport-specific references, recognising the sector's key role in supporting adaptation and enhancing resilience to climate change impacts. NAPs support countries, especially developing and least-developed countries, in planning and implementing medium- and long-term adaptation to climate change.

- The Marshall Islands' NAP of 2023 underlines the importance of careful design, construction and maintenance of public facilities (including roads and runways) to improve the overall resilience of infrastructure, as well as the need for infrastructure planning to avoid negative impacts such as coastal erosion and pollution.[95]
- In its 2023 NAP, Papua New Guinea echoes its NDC commitment on transport adaptation to build or rehabilitate transport assets totalling USD 1.2 billion (PGK 4.2 billion) to meet climate-resilient codes and standards. The NAP outlines a plan to conduct rigorous risk and vulnerability assessments of inland road networks and coastal roads and to update road design standards to reflect climate change considerations, among others.[96]

Countries in the region, including several SIDS notably Fiji, Kiribati, Tuvalu, have made increasing investments towards enhancing transport resilience.

- New Zealand's National Land Transport Programme (2024-2027) establishes a new Coastal Shipping Resilience Fund of USD 30 million over three years (2024-25 to 2026-27) for activities that enhance the resilience of coastal shipping freight connections.[97]
- In Fiji, a USD 199.6 million project aims to enhance the resilience of four major bridges on the main island of Viti Levu against natural hazards and climate change, thereby benefiting 62% of the country's total population.[98] The project, funded by the Government of Fiji, the World Bank, and the Asian Development Bank, kicked off in 2025 and is slated for completion by 2031.[99]
- Kiribati is retrofitting coastal infrastructure – such as roads, causeways and jetties – to withstand climate threats through a USD 110 million World Bank grant approved in 2025, while also upgrading air and sea transport infrastructure to maintain connectivity and ensure food and water security.[100]
- In 2023, the World Bank approved a USD 23 million project in Tuvalu to enhance the resilience of the island's airport infrastructure to disasters and the impacts of climate change.[101]

In 2023, countries in Oceania provided fossil fuel subsidies totalling USD 1,037 per capita – the third highest levels after North America (USD 2,172 per capita) and Europe (USD 1,265 per capita) – incentivising fossil fuel use and contributing to rising emissions.[102] **Fossil fuel subsidies in Oceania are projected to increase around 26% between**

2023 and 2030, further undermining climate and sustainability efforts.[103] **Fossil fuel subsidies as a share of GDP ranged from 1% in Papua New Guinea to 1.8% in New Zealand, 2.4% in Australia, 6.5% in Fiji and 6.6% in Tonga in 2023.**[104]

Countries across Oceania have adopted various measures to support people in choosing active, shared, and public transport, and have also supported closer integration between urban mobility and land use planning.

- Kiribati offers financial incentives for bicycles and electric bicycles, and Tuvalu is exploring the possibility of introducing solar-powered electric bikes.[105]
- Samoa is promoting shared and electric micro-mobility through a phased approach from 2026 onwards, starting with pilot trials of 50 e-bikes and 5 e-minibuses, followed by a full rollout of 2,000-3,000 e-bikes and 80-100 e-minibuses to enhance village mobility.[106]
- In its Second Biennial Update Report of 2022, Papua New Guinea set out to reduce vehicle-kilometres through more compact development.[107]
- Tonga's Low Emission Development Strategy (2021-2050) aims to decentralise services from urban to rural areas to decrease traffic congestion around Tongatapu as well as the centre of island districts.[108]
- At the sub-national level, South Australia's Transport Strategy of 2025 identifies the integration of transport with land use planning and growth trends as a strategic priority to secure a fit-for-purpose transport system. As part of this effort, the government targets the improvement of active and public transport networks as well as corridor infrastructure to connect new growth areas.[109]

Australia and New Zealand have increasingly adopted dedicated policies and targets to promote the electrification of transport, including at the sub-national level. In Australia, sub-national governments have also been the first movers in phasing out internal combustion engine vehicles

- In 2022, New Zealand set a target for 30% zero-emission vehicles in its light-duty vehicle fleet by 2035, which it aims to achieve by boosting the roll-out of charging infrastructure and introducing further measures to shift away from international combustion engines (especially high-emitting vehicles).[110]
- To match its commitment to net zero emissions by 2050, Australia adopted the Powering Australia Plan in 2022, including a USD 28 million (AUD 45.8 million) fund over six years for implementation.[111] The Plan includes a new vehicle efficiency standard, applicable to new cars from January 2025, that seeks to incentivise the production and import of fuel-efficient, low- and zero-emission vehicles.[112] Adoption of the standard is expected to generate USD 58.7 billion (AUD 95 billion) in fuel savings and USD 3 billion (AUD 5 billion) in health savings by 2050.[113]
- Australia has implemented an Electric Car Discount to reduce the purchase price of electric vehicles and is expanding charging infrastructure through a USD 309 million (AUD 500 million) Driving the Nation Fund.[114]
- The Zero Emissions Vehicles Strategy 2022-30 of July 2022 aims to ensure that 80-90% of new light vehicle sales in the Australian Capital Territory (ACT) are zero-emission vehicles by 2030.[115]
- In 2020, the Tasmanian Government set a target of transitioning its fleet to 100% electric by 2030.[116]
- South Australia and Queensland set targets to phase out petrol and diesel cars and vans by 2035 and 2036, respectively.[117]

Zero-emission buses have gained in popularity in recent years for their economic, health and emissions benefits.

- Starting in July 2025, public authorities in New Zealand will be obliged to procure only zero-emission buses, with this shift supported by at least USD 44.7 million through the 2024 budget.[118]
- The Australian government joined the international Zero-Emission Government Fleet Declaration and aims to procure 100% zero-emission vehicles across all categories for the government fleet by 2035.[119]
- At the sub-national level, the Zero Emissions Vehicle (ZEV) Roadmap of Victoria (Australia) includes a target for all public transport bus purchases to be zero-emission vehicles starting in 2025.[120]

The region's SIDS have pursued vehicle electrification, although progress has been slower than in Australia and New Zealand.

- Vanuatu's LT-LEDS of 2023 strives to transition 10% of the public bus fleet to electric models by 2030 and to grow the electric share of total land and maritime transport demand from 0% in 2030 to 50% in 2050.[121]
- The Solomon Islands, through its Climate Technology Centre and Network (CTCN), developed an Electric Mobility Policy and Roadmap in 2022 and undertook a pre-feasibility testing of electric buses for Honiara.[122]
- Tuvalu's NDC of 2022 highlights a USD 35,000 pilot project to procure 12 e-bikes in the country.[123]

A growing number of countries in the region have pursued efforts to increase the use of renewable energy in transport. Several countries, including Marshall Islands, Palau, Papua New Guinea, Solomon Islands, and Vanuatu, have policy documents that refer directly to the use of renewables in road transport. Countries have adopted varying targets to reach shares of electricity generation from renewable sources.

- In its LT-LEDS of 2023, Australia references its aspirations to become a renewable energy superpower by developing a renewable hydrogen industry to help decarbonise hard-to-abate sectors such as heavy transport.[124] The Hydrogen Headstart programme, announced in the 2023-24 Budget, will invest USD 1.24 billion (AUD 2 billion) to accelerate the development of Australia's renewable hydrogen industry by covering the gap between the cost of producing renewable hydrogen and its market price.[125]
- Palau's Voluntary National Review (VNR) of its implementation of the Sustainable Development Goals (SDGs) mentions an ideal mix of land use and transport integration (including active mobility infrastructure), combined with public and marine transport powered by renewable energy.[126]
- In its second-generation NDC of 2022, Micronesia sets targets to increase the renewable electricity share to more than 70% of total generation by 2030, and to reduce CO_2 emissions from electricity generation more than 65% below 2000 levels.[127]

Pacific SIDS have taken steps to address the emissions from maritime transport, both at the global level and domestically. Although SIDS have contributed minimally to the emissions from international shipping, they have been vocal advocates for more stringent measures to reduce shipping emissions because of their heavy reliance on maritime transport for trade and connectivity and their vulnerability to the impacts of climate change. Measures include targets, a universal carbon levy, corridors and low-carbon fuels.

- SIDS have called for a universal carbon levy on shipping emissions through the International Maritime Organization (IMO), both to decarbonise maritime transport and to generate much-needed revenue to support climate adaptation and mitigation efforts in SIDS.[128]
- At the April 2025 gathering of the IMO's Marine Environment Protection Committee (MEPC 82), governments approved the first-ever Net-Zero Framework for the maritime sector, which includes new annual emission reduction targets for 2028-2035 along with penalties for non-compliance.[129] However, some SIDS have criticised the IMO decision for its lack of incentives for industry to make the shift to cleaner technologies.[130] Under the new framework, ship owners will be required to reduce the emissions intensity of their vessels 30% below 2008 levels by 2035 and 65% by 2040, with targets for 2035-2040 to be decided in 2032.[131] Ship owners that fail to meet the targets will be obliged to purchase "remedial units" from the IMO to make up the difference, priced at USD 380 per tonne of CO_2 equivalent.[132]
- Marshall Islands' 2023 Sustainable Domestic Maritime Transport Roadmap aims to reduce domestic maritime transport emissions at least 40% below 2010 levels by 2030 and to fully decarbonise the sector by 2050.[133] To meet these objectives, the roadmap calls for replacing petrol outboards, introducing wind-assisted ship propulsion, generating electrical loads with wind turbines and solar panels, and implementing ship operational and design efficiency measures, among others.[134]

A growing number of countries in Oceania have implemented green shipping corridors to decarbonise maritime transport. By focusing on specific trade routes and fostering close collaboration among key port hubs and stakeholders, green shipping corridors can be instrumental in eliminating barriers to the uptake of zero-emission solutions for the maritime sector.

- Fiji, Kiribati, Marshall Islands, Solomon Islands, Tonga, Tuvalu and Vanuatu have joined the Pacific Blue Shipping Partnership (PBSP), aiming to reduce their greenhouse gas emissions from domestic shipping 40% by 2030 and 100% by 2050.[135]
- In 2024, Australia and Singapore signed a Memorandum of Understanding on establishing a Green and Digital Shipping Corridor, which will pilot solutions to enhance the resilience, efficiency and sustainability of global supply chains and logistics between the two countries.[136]
- A pre-feasibility study for an Australia–New Zealand green shipping corridor, which could allow commercially operating ships to use alternative fuels, was carried out jointly with industry stakeholders in 2023.[137]

Countries in the region have shown strong interest in advancing low-carbon maritime transport through electrification, biofuels and other alternative low-carbon fuels.

- In 2024, the "Low Carbon Sea Transport" partnership between Marshall Islands and Germany's GIZ launched a prototype low-emission vessel that combines wind-assisted propulsion, fuel-efficient engines and solar power.[138]
- New Zealand's Decarbonising Transport Action Plan 2022-2025 recognises the decarbonisation of shipping and aviation as "longer-term projects" due to the cost and availability of low-carbon technologies for these sectors.[139] It underlines the need for a modal shift to cleaner modes, such as coastal shipping and rail freight.[140] As part of these efforts, New Zealand's Transport Agency Waka Kotahi made available USD 16.78 million (NZD 30 million) for investment in the coastal shipping sector as part of the 2021-24 National Land Transport Programme.[141]
- The Australian government, in the framework of its Transport and Infrastructure Net Zero Roadmap and Action Plan, is developing a Maritime Emissions Reduction National Action Plan to set maritime transport on a path to net zero emissions. It is intended to decarbonise domestic maritime transport, advance the development of green shipping corridors from Australia and contribute to reductions in international shipping emissions.[142]

To decarbonise its freight transport sector, New Zealand has set two related targets: to reduce emissions from freight 35% below 2019 levels by 2035, and to reduce the emissions intensity of transport fuel by 10%.[143] To this end, the country seeks to promote a modal shift from road to railways and coastal shipping while accelerating the uptake of low-emission heavy-duty vehicles. The national strategy commits to decarbonising the aviation and maritime sectors by encouraging the production and uptake of low-carbon fuels such as biofuels, electricity and green hydrogen.[144]

New Zealand provides grants to support the uptake of low- and zero-emission trucks. The government's Low Emissions Heavy Vehicles Fund (LEHVF), supported with a 2024 budget allocation of USD 15.52 million (NZD 27.75 million), aims to promote innovation and offset the costs of hundreds of heavy-duty vehicles powered by clean technologies. This intends to help early adopters overcome upfront cost barriers and accelerate the uptake of battery electric, hydrogen fuel cell or hybrid vehicles. The fund is expected to support replacing up to 500 diesel vehicles with low- and zero-emission vehicles by 2028.[145]

Australia has explored deploying electric trucks for urban deliveries, and hydrogen as a solution for longer-haul road freight transport. The government is establishing hydrogen refuelling networks for key freight routes.[146] The Australian Renewable Energy Agency (ARENA) awarded logistics solutions company Team Global Express a grant of USD 12.4 million (AUD 20 million) to support a USD 27.2 million (AUD 44 million) "Depot of the Future" project to make metropolitan deliveries using small electric trucks that recharge when they return to base.[147] In addition to 60 new trucks, the project includes back-to-base charging infrastructure and a 500-kilowatt battery to power a third of the company's Sydney-based express parcel fleet.[148]

Australia is expanding and modernising its rail infrastructure for freight, inter-city passenger and urban transport. High-speed rail is a key element in the country's strategy to achieve net zero emissions by 2050.[149]

- As of 2025, the largest infrastructure project in Australia was the Inland Rail project, a 1,600-kilometre railway line from Brisbane to Melbourne that is intended mainly for freight and is expected to be completed by 2027.[150] In 2023, the 176-kilometre section between Narrabri and North Star became operational.[151]
- Rail projects under way in and around Sydney include a 30.2-kilometre upgrade to the metro system, which is expected to be completed by 2026.[152] The first phase – a 12-kilometre light rail line – became operational in 2024.[153]
- In 2023, an Australian mining company ordered the world's first 100% battery-powered heavy-haul freight locomotive, which has an energy capacity of 7 megawatt-hours and will operate on the Roy Hill railway to transport iron ore in Western Australia.[154]

- Australia's High Speed Rail Authority released plans in 2024 for a high-speed rail between Sydney and Melbourne, which would be the first and only high-speed rail in Oceania and is targeted for completion in 2037.[155]

In 2023, Australia launched a comprehensive review of its National Freight and Supply Chain Strategy dating from 2019, which resulted in the release of the strategy's Review Report in 2024.[156] Recognising decarbonisation as a critical emerging theme for Australia's freight sector, the report calls for incorporating a new goal on "decarbonising the freight and supply chain sector" along with dedicated resilience and decarbonisation key performance indicators to enable the monitoring and measurement of the updated Strategy.[157]

To enhance transport connectivity, Pacific SIDS have emphasised the improvement of rural access.

- The Solomon Islands' National Development Strategy 2016-2035 targets the expansion of road networks to connect inland communities to coastal roads and maritime networks, which is seen as crucial in fostering access to agricultural land, rural connectivity and sustainable development.[158]
- Palau is striving to ensure that 100% of its rural population lives within 2 kilometres of an all-season road by 2030.[159]
- Vanuatu's 2030 strategy seeks to provide equitable and affordable access to efficient transport in rural and urban areas, including by establishing effective partnerships that facilitate the development of the private sector and rural communities as service suppliers in providing transport and infrastructure.[160]

Partnerships in action

SLOCAT partners engaged in dozens of actions during 2023-2024, including:

- In 2024, the **Asian Development Bank** (**ADB**) approved a USD 280 million financing package in Papua New Guinea for the Sustainable Highlands Region Core Road Network Project, which aims to improve road transport efficiency, boost accessibility for people, goods, and services, enhance disaster responsiveness, and strengthen road safety.[161]
- The **ADB** is providing the Government of Solomon Islands with a second tranche of USD 53 million for the Land and Maritime Connectivity Project, which strengthens transport infrastructure and better connects people in rural areas to markets, health and education services.[162] Tranche 2 continues the rehabilitation and climate-proofing of road infrastructure initiated under Tranche 1, and has a strong focus on institutional improvements, including developing a gender strategy to support women in technical and leadership roles within the Ministry of Infrastructure Development.[163]
- Between 2023 and 2025, the **United Nations Economic and Social Commission for Asia and the Pacific** (**ESCAP**) has supported sustainable transport transitions in Pacific Island nations through regional workshops and consultations. It convened a Pacific sub-regional consultation in Fiji in 2023 to align national transport goals with climate objectives, followed by two key dialogues in 2024 on setting low-carbon transport targets and identifying green transport corridors.[164] In 2025, ESCAP held a capacity-building workshop to equip Pacific SIDS with tools to leverage smart mobility solutions.[165]
- The **Pacific Office of the United Nations Development Programme** (**UNDP**), based in Fiji, works with island nations that face development challenges such as geographic isolation and high vulnerability to climate change. In 2023, UNDP Pacific launched a Multi-Country Programme Document (2023-2027) outlining its commitment to addressing critical regional issues such as high transport costs and heavy reliance on maritime transport. Recognising the need for resilient and cost-effective mobility systems, UNDP Pacific prioritises sustainable transport initiatives that reduce fossil fuel dependency, enhance connectivity across dispersed populations, and support achievement of the SDGs.[166]
- The **Pacific Islands Development Forum** (**PIDF**) proclaimed 2020-2030 as the Pacific Decade for Sustainable Transport, during the 2019 PIDF Leaders' Summit in Nadi, Fiji. This initiative recognises the urgent need to address transport emissions and calls for reducing carbon emissions, investing in renewable energy-powered transport, reviving traditional maritime practices combined with modern technology, and integrating sustainable transport in NDCs and LEDS.[167] It urges co-ordinated efforts among national stakeholders and international partners to promote public transport, clean energy use and climate-resilient mobility across all Pacific Island nations.[168]

MODULE 3 | SIDS

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SPOTLIGHT

Small Island Developing States Overview

DEMOGRAPHICS, TRANSPORT AND SUSTAINABILITY DATA

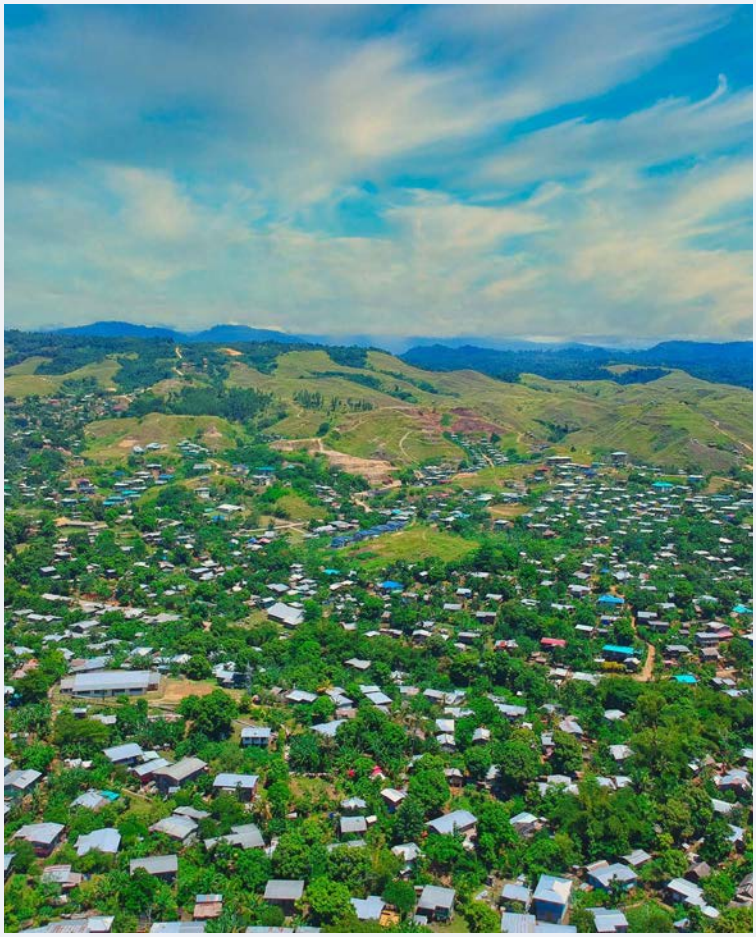
Indicators	SIDS	Global
Population size (2023)	55.3 million	8,000 million
Population growth (2015-2023)	10%	8.5%
Urban population share (2023)	57.5%	57%
Urban population growth (2015-2023)	16.2%	16%
GDP per capita (2023)	USD 11,826 (constant 2015 USD)	USD 11,337 (constant 2015 USD)
GDP growth (2015-2023)	25%	22.8%
Share of women employed in transport and storage (2023)	18%	15.6%
Motorisation rate (2022)	137 vehicles per 1,000 people	218.66 vehicles per 1,000 people
Share of urban population with convenient access to public transport (2020)	42.4%	52%
Share of rural population with access to all-weather primary and secondary roads (2019)	42.2%	38%
Transport total GHG emissions (2023)	35 million tonnes CO_2eq	7,123 million tonnes CO_2eq
Per capita transport GHG emissions (2023)	0.63 tonnes CO_2eq	0.89 tonnes CO_2eq
Fossil fuel subsidies (explicit and implicit) (2023)	USD 761 per capita (constant 2021 USD)	USD 813 per capita (constant 2021 USD)
Share of renewable energy sources in transport	No data	4.6% (2023)
Carbon intensity of electricity generation (2023)	546.6 gCO_2/kWh	417 gCO_2/kWh
Transport contribution to air pollution (2019)	3.43%	6%
Premature deaths attributable to air pollution by transport (2019)	0.86 per 100,000 people	2.29 per 100,000 people
Road casualties (2021)	21 per 100,000 people	15 per 100,000 people

Source: See endnote 1 for this section.

KEY FINDINGS

Demand, use and access

- Small island developing states (SIDS) refer to a group of 39 States and 18 Associate Members of United Nations regional commissions that face unique social, economic and environmental vulnerabilities across the Caribbean Sea, the Atlantic and Pacific Oceans, the Indian Ocean and the South China Sea.
- The population of SIDS grew 10% between 2015 and 2023, outpacing global growth of 8.5% to reach a total of around 55 million people. Despite their relatively small populations, SIDS have experienced rising transport demand.
- SIDS' economies are closely tied to tourism and transport. Whereas in many low- and middle-income countries, tourism accounted for less than 5% of the gross domestic product (GDP) in 2019, in two-thirds of SIDS it represented more than 20% of GDP, including 65% in Maldives and 58% in Palau.
- The share of women employed in the transport and storage industries in SIDS was around 18% in 2023, well below the levels in North America (28.5%), Oceania (23.3%) and Europe (22.3%) but above the global average of 15.6%.
- The lack of transport infrastructure, including formal public transport and road infrastructure, is a fundamental challenge to sustainable and resilient transport development in many SIDS. In 2020, just 42.4% of the urban population on average across SIDS had convenient access to public transport, compared to 52% globally. For Pacific SIDS, only 27% of the urban population had convenient access to public transport in 2020.
- Rising passenger transport demand due to population growth has been met by a mix of private vehicle use and informal transport, along with non-motorised transport.
- Access to all-weather roads remains a major challenge for rural populations in SIDS. As of 2019, only 15.3% of the rural population lived within two kilometres of an all-season primary or secondary road in the seven SIDS where data were available.
- The average motorisation rate in SIDS (covering four-wheeled motor vehicles) in 2022 was 137 vehicles per 1,000 people, well below the global average of 219 vehicles per 1,000 people. The low levels of public transport and other modes (such as walking and cycling) result in relatively high motorisation rates. However, the majority of SIDS in the Pacific have low road quality.
- Maritime ports and airports serve as crucial lifelines for SIDS, supporting external trade of essential goods and food as well as key economic activities such as tourism and disaster response.
- For freight maritime transport, 16 SIDS (44% of the total) experienced declines in their Liner Shipping Connectivity Index score between 2020 and 2025. Except for the Dominican Republic, Jamaica, and Singapore, all SIDS scored below the indexed average value of 100.



KEY FINDINGS

Sustainability and climate trends

- In 2023, the transport sector contributed around 15% of the total greenhouse gas emissions from SIDS (excluding international aviation and shipping), well above transport's global emission share of 0.5%. Transport emissions in SIDS increased 16% between 2015 and 2023 and 5.3% in 2023, to reach 35 million tonnes of carbon dioxide (CO_2) equivalent.
- In 2023, transport greenhouse gas emissions represented around half of the total economy-wide CO_2 emissions in five SIDS: Seychelles (54% of total emissions), Palau (51%), and Cabo Verde, Cook Islands and Maldives (48% each). Transport emissions in SIDS will likely continue to rise alongside transport demand, unless mitigation policies are developed and implemented.
- Per capita transport greenhouse gas emissions in SIDS totalled 0.63 tonnes of CO_2 equivalent in 2023. This was under the global average of 0.89 tonnes, below levels in Europe (1.66 tonnes) and Latin America and the Caribbean (0.94 tonnes), similar to levels in Asia (0.61 tonnes), and higher than in Africa (0.26 tonnes).
- The electricity grids of SIDS rely heavily on fossil fuels, resulting in a carbon intensity of 546 grams of CO_2 per kilowatt-hour in 2023.
- Transport-induced air pollution contributed around 3.4% of total air pollutant emissions in SIDS, resulting in 0.86 premature deaths per 100,000 people in 2019, well below the global averages of 6% of air pollutant emissions and 2.3 premature deaths.
- Road safety remains a persistent public health challenge in SIDS, where road deaths averaged 21 casualties per 100,000 people in 2021, above the global average of 15.0 casualties.
- The impacts of climate change have been especially severe in SIDS due to the low resilience of infrastructure as well as geographical characteristics such as remoteness, mountainous terrain, and low-lying coastal areas, which make them more vulnerable to external shocks and disruptions.
- SIDS account for two-thirds of the countries that suffer the highest relative losses from natural disasters globally – between 1% and 9% of their GDP each year. Between 1970 and 2020, SIDS lost USD 153 billion due to natural hazards, equivalent to 0.9% of their GDP during this period.
- Climate change can especially impact urban areas and tourism infrastructure: a 25% reduction in tourism in SIDS could result in losses of USD 7.4 billion or 7.3% of GDP.
- Many SIDS have low shares of paved roads, making their road networks vulnerable to climate impacts and limiting access to alternative routes when disruptions occur.
- Climate-induced disruptions hinder the accessibility and connectivity of aviation and maritime transport for both passengers and freight, as stronger storms and changing sea conditions affect shipping lanes and infrastructure that is vital for trade and transport.
- Climate change affects communities differently across SIDS, with poverty and inequality expected to worsen in many places due to disproportionate impacts on women and children as well as increased health risks from undernutrition and vector-borne disease.

Photo: Silke von Brockhausen / UNDP

KEY FINDINGS

Policy and investment developments

- SIDS have developed and implemented a range of policy actions to respond and adapt to climate change and evolving transport demand.
- Adaptation measures for the transport sector include increased infrastructure resilience and early warning systems, while mitigation policies focus mainly on electric mobility in urban areas and sustainable maritime transport. Additionally, SIDS have sought to strengthen public transport, walking and cycling.
- Many SIDS have prioritised sustainable maritime transport connectivity.
- In 2023, fossil fuel subsidies in SIDS totalled USD 761 per capita, slightly below the global average of USD 813 per capita. Several Pacific SIDS adopted the 2023 Port Vila Call to Action, which aims for a "just and equitable transition towards a fossil fuel free Pacific".
- In their Nationally Determined Contributions (NDCs) towards reducing emissions under the Paris Agreement, SIDS have outlined and implemented measures to mitigate their transport emissions, including through the adoption of new technologies.
- All six of the third-generation NDCs submitted by SIDs as of 1 August 2025 featured actions aimed at reducing greenhouse gas emissions from transport. The third-generation NDCs of Belize, Marshall Islands and Saint Lucia featured specific targets for mitigating transport emissions, while those for Maldives, Niue and Singapore did not.
- SIDS have responded to the impacts of climate change by developing and implementing adaptation measures for transport infrastructure – including climate-resilient roads, transport emergency or disaster plans, National Adaptation Plans (NAPs), and disaster notification and early warning systems.
- Some SIDS are developing climate-resilient codes and standards for transport infrastructure and pursuing airport rehabilitation to meet international and climate-resilient standards.
- Global policy dialogues and inter-governmental processes have created opportunities for greater co-operation across SIDS.
- The United Nations, recognising the special needs and characteristics of SIDS and their sustainable development challenges, has initiated various programmes and efforts to help mitigate vulnerabilities.

Context, challenges and opportunities

Small island developing states (SIDS) refer to a group of 39 States and 18 Associate Members of United Nations regional commissions[i] that face unique social, economic and environmental vulnerabilities across the Caribbean Sea, the Atlantic and Pacific Oceans, the Indian Ocean and the South China Sea.[2] Many of these countries have historically been dependent on ocean resources and ecosystems and are now increasingly vulnerable to the impacts of climate change, extreme weather, natural disasters, and other external shocks and disruptions. A key driver of SIDS' challenges is their remote geography, which leads to high transport costs and irregular connectivity, high dependence on air and sea transport for socio-economic development and competitiveness, and heavy reliance on imports. Due to their smaller populations, SIDs often cannot benefit from economies of scale, contributing to the high cost of transport.

For both passenger and freight transport, SIDS face limited supply and services, but as demand grows, a variety of shared transport challenges have arisen. For passenger transport, challenges facing SIDS in the Pacific include high shares of private vehicle use, congestion, increasing vessel demand and emissions, the need for alternative energy resources, and difficulties financing sustainable transport, including electric vehicles.[3] For freight transport, resilient and efficient maritime connectivity remains a critical need for sustainable economic development in SIDS, in addition to support for the 2030 Agenda for Sustainable Development, greenhouse gas reduction targets, technological innovation and public-private sector collaboration to improve the performance of shipping and ports.[4]

Improving the resilience of SIDS, especially to future disruptions, is an existential and development priority. To ensure efficient transport adaptation and decarbonisation, countries have expressed the need to form new collaborations, co-ordination mechanisms for multi-stakeholder engagement, and legal frameworks to ensure the implementation of appropriate measures.[5] As technical expertise and capacity are still lacking in many SIDS, technology transfer focused on low- or zero-carbon transport development and adaptation is critical. Implementing existing low-carbon transport plans and roadmaps to transition to energy efficiency will also require sustainable financing mechanisms.

Demand, use and access

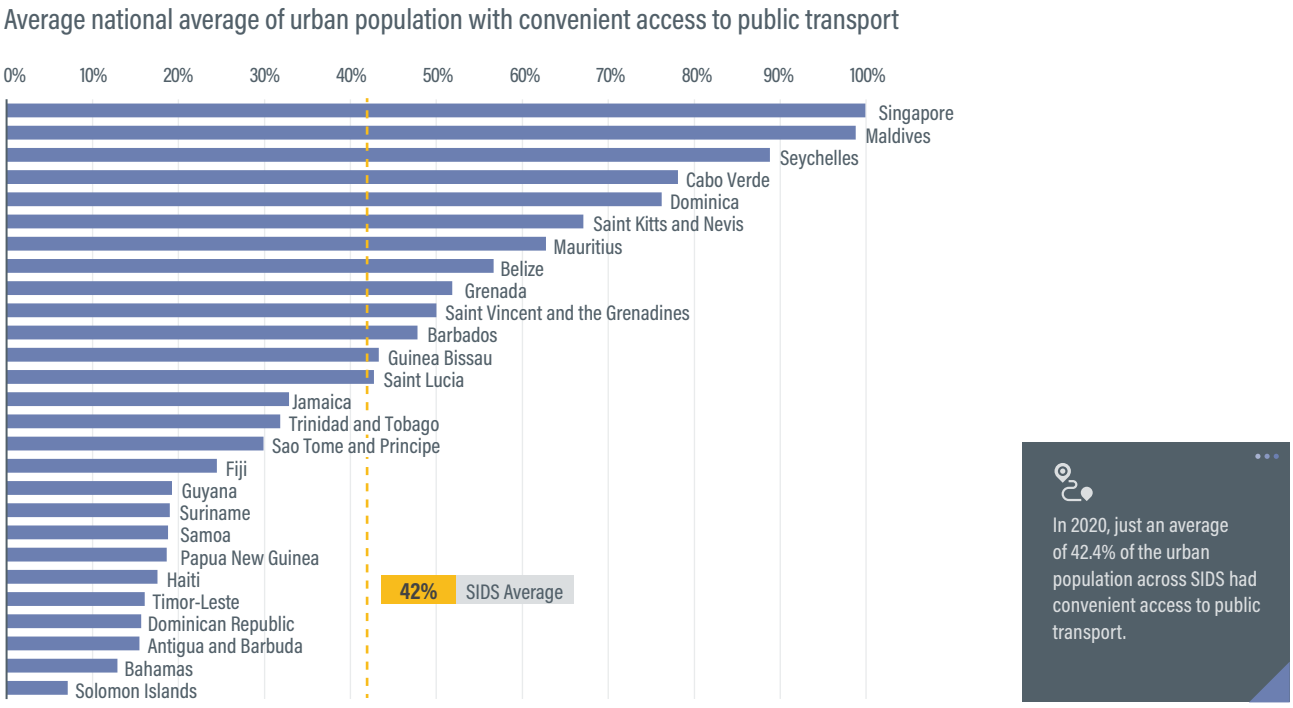
The population of SIDS grew 10% between 2015 and 2023, outpacing global growth of 8.5% to reach a total of around 55 million people.[6] **Despite their relatively small populations, SIDS have experienced rising transport demand.** In Pacific SIDS, population growth accelerated notably after 2015, showing the steepest curve among Asian sub-regions.[7]

SIDS' economies are closely tied to tourism and transport. Whereas in many low- and middle-income countries, tourism accounted for less than 5% of the gross domestic product (GDP) in 2019, in two-thirds of SIDS it represented more than 20% of GDP, including 65% in Maldives and 58% in Palau.[8] **The share of women employed in the transport and storage industries in SIDS was around 18% in 2023, well below the levels in North America (28.5%), Oceania (23.3%) and Europe (22.3%) but above the global average of 15.6%.**[9]

The lack of transport infrastructure, including formal public transport and road infrastructure, is a fundamental challenge to sustainable and resilient transport development in many SIDS.[10] **In 2020, just 42.4% of the**

i The 39 States are: Antigua and Barbuda, Bahamas, Barbados, Belize, Cabo Verde, Comoros, Cook Islands, Cuba, Dominica, Dominican Republic, Fiji, Grenada, Guinea-Bissau, Guyana, Haiti, Jamaica, Kiribati, Maldives, Marshall Islands, Mauritius, Micronesia (Federated States of), Nauru, Niue, Palau, Papua New Guinea, Samoa, São Tomé and Príncipe, Seychelles, Singapore, Solomon Islands, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Suriname, Timor-Leste, Tonga, Trinidad and Tobago, Tuvalu and Vanuatu. The 18 Associate Members of United Nations regional commissions are: American Samoa, Anguilla, Aruba, Bermuda, British Virgin Islands, Cayman Islands, Commonwealth of Northern Marianas, Curacao, French Polynesia, Guadeloupe, Guam, Martinique, Montserrat, New Caledonia, Puerto Rico, Sint Maarten, Turks and Caicos Islands, U.S. Virgin Islands.

FIGURE 1. Average access to public transport for urban population in SIDS, 2020



Sources: See endnote 11 for this section.

urban population on average across SIDS had convenient access to public transport, compared to 52% globally (Figure 1).[11] **For Pacific SIDS, only 27% of the urban population had convenient access to public transport in 2020.**[12] **Rising passenger transport demand due to population growth has been met by a mix of private vehicle use and informal transport, along with non-motorised transport.**

Access to all-season roads remains a major challenge for rural populations in SIDS. As of 2019, only 15.3% of the rural population lived within two kilometres of an all-season primary or secondary road in the seven SIDS where data were available.[13] Access shares were lowest in Guinea-Bissau (15.3%) and Belize (26.7%) and were higher in São Tomé and Príncipe (46%), Jamaica (48.1%), the Dominican Republic (49.3%), Dominica (53.1%) and Cabo Verde (56.8%).[14]

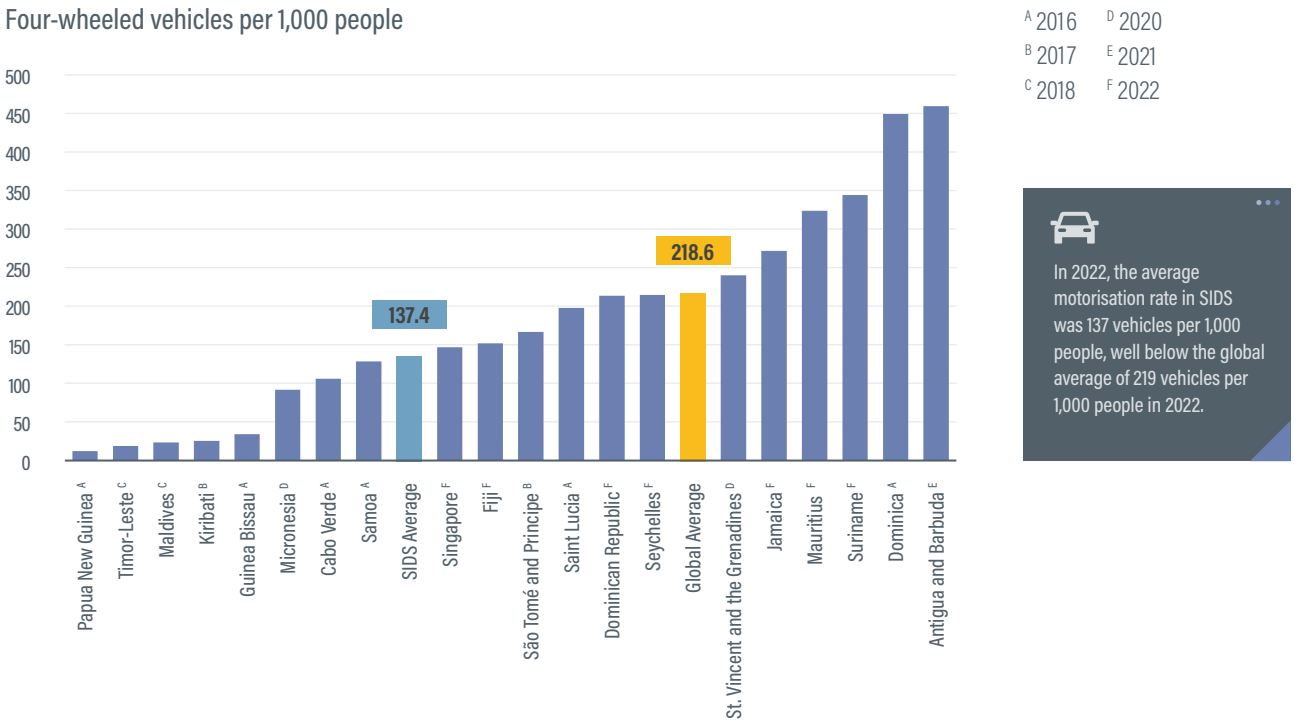
The average motorisation rate in SIDS (covering four-wheeled motor vehicles) in 2022 was 137.4 vehicles per 1,000 people, well below the global average of 218.6 vehicles per 1,000 people (Figure 2).[15] **The low levels of public transport and other modes (such as walking and cycling) result in relatively high motorisation rates. However, the majority of SIDS in the Pacific have low road quality.**[16]

Maritime ports and airports serve as crucial lifelines for SIDS, supporting external trade of essential goods and food as well as key economic activities such as tourism and disaster response.[17] External air connectivity (i.e., long-haul flights) has improved in SIDS, whereas connectivity within the region (short-haul flights between islands) has stagnated or even declined.[18] In Caribbean SIDS, air passenger traffic grew 50% between 2007 and 2017, due mostly to flights from outside the region.[19]

For freight maritime transport, 16 SIDS (44% of the total) experienced declines in their Liner Shipping Connectivity Index[ii] score between 2020 and 2025 (Figure 3).[20] **Except for the Dominican Republic, Jamaica, and Singapore, all SIDS scored below the indexed average value of 100.**[21] This decline may reflect the deterioration of port infrastructure (which impacts goods delivery) and demonstrates the need to improve maritime transport and port connectivity in island nations and globally. (See 4.10 Shipping.)

ii The Liner Shipping Connectivity Index is a comprehensive tool for quantifying integration in the global maritime network, providing a standardised metric to assess a country's access to and efficiency within international liner shipping.

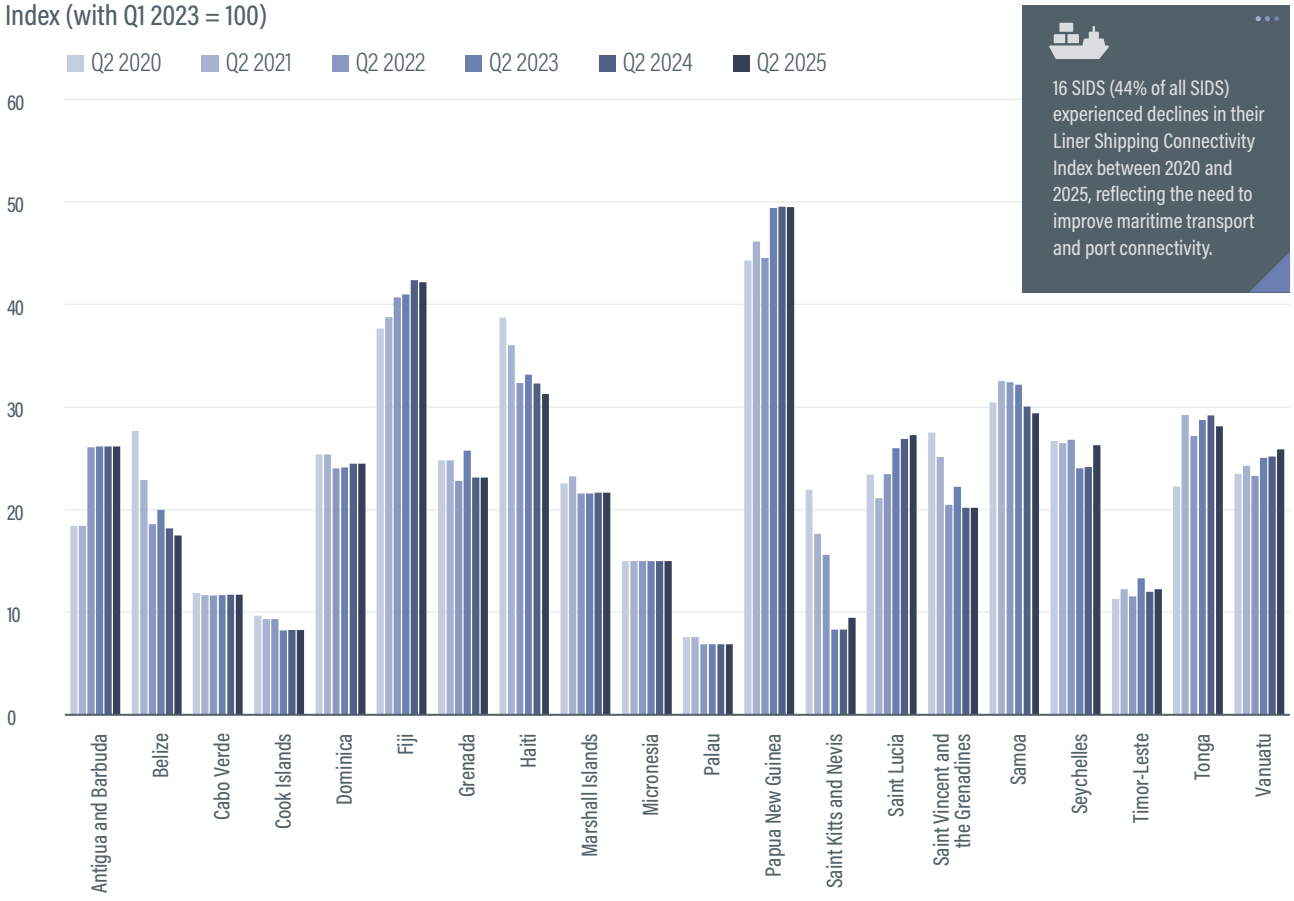
FIGURE 2. Average motorisation rate (four-wheeled vehicles per 1,000 people) in SIDS, 2016-2022



In 2022, the average motorisation rate in SIDS was 137 vehicles per 1,000 people, well below the global average of 219 vehicles per 1,000 people in 2022.

Source: See endnote 15 for this section.

FIGURE 3. Liner Shipping Connectivity Index for selected SIDS, Q2 2020 to Q2 2025



16 SIDS (44% of all SIDS) experienced declines in their Liner Shipping Connectivity Index between 2020 and 2025, reflecting the need to improve maritime transport and port connectivity.

Source: See endnote 20 for this section.

Sustainability and climate trends

In 2023, the transport sector contributed around 15% of the total greenhouse gas emissions from SIDS (excluding international aviation and shipping), well above transport's global emission share of 0.5%.[22] **Transport emissions in SIDS increased 16% between 2015 and 2023 and 5.3% in 2023, to reach 35 million tonnes of carbon dioxide (CO_2) equivalent.**[23] **The region's largest emitter was the Dominican Republic, with 8.5 million tonnes of CO_2 equivalent in 2023.**[24] Singapore showed the greatest increase in emissions that year, rising 11% to 6.8 million tonnes of CO_2 equivalent.[25]

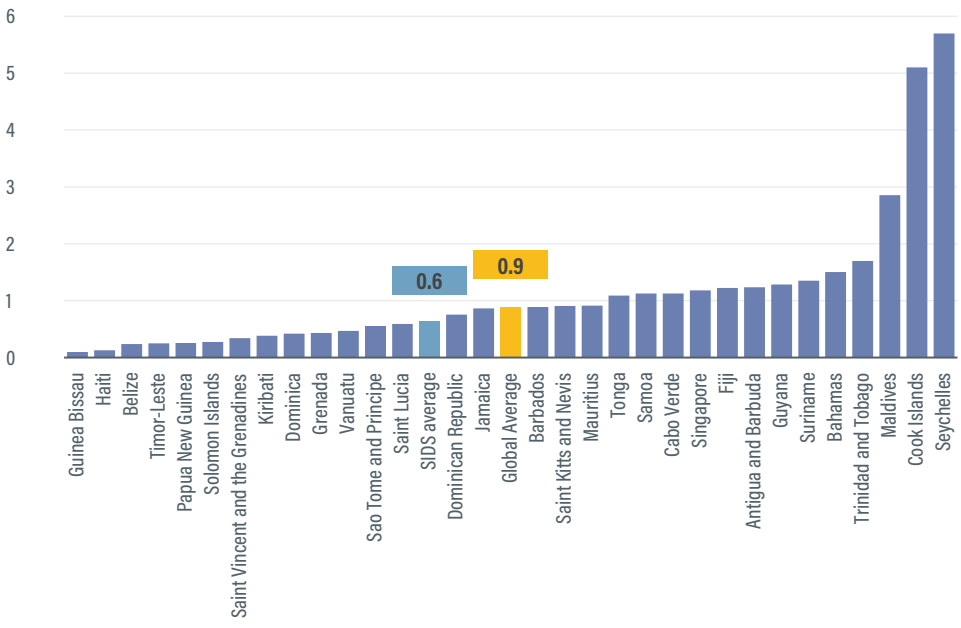
In 2023, transport greenhouse gas emissions represented around half of the total economy-wide CO_2 emissions in five SIDS: Seychelles (54% of total emissions), Palau (51%), and Cabo Verde, Cook Islands and Maldives (48% each).[26] **Transport emissions in SIDS will likely continue to rise alongside transport demand, unless mitigation policies are developed and implemented.** Transport is the largest emission source in one-third of all SIDS (13 countries: Cabo Verde, Cook Islands, Fiji, Jamaica, Kiribati, Maldives, Palau, Papua New Guinea, Samoa, São Tomé and Príncipe, Seychelles, Solomon Islands and Tonga).[27]

Per capita transport greenhouse gas emissions in SIDS totalled 0.63 tonnes of CO_2 equivalent in 2023 (Figure 4).[28] **This was under the global average of 0.89 tonnes, below levels in Europe (1.66 tonnes) and Latin America and the Caribbean (0.94 tonnes), similar to levels in Asia (0.61 tonnes), and higher than in Africa (0.26 tonnes).**[29]

The electricity grids of SIDS rely heavily on fossil fuels, resulting in a carbon intensity of 546 grams of CO_2 per kilowatt-hour in 2023.[30] Belize had a relatively cleaner grid, with only 155 grams of CO_2 per kilowatt-hour, whereas 17 SIDS had grid carbon intensities above 500 grams of CO_2 per kilowatt-hour.[31]

FIGURE 4. Per capita transport greenhouse gas emissions in SIDS, 2023

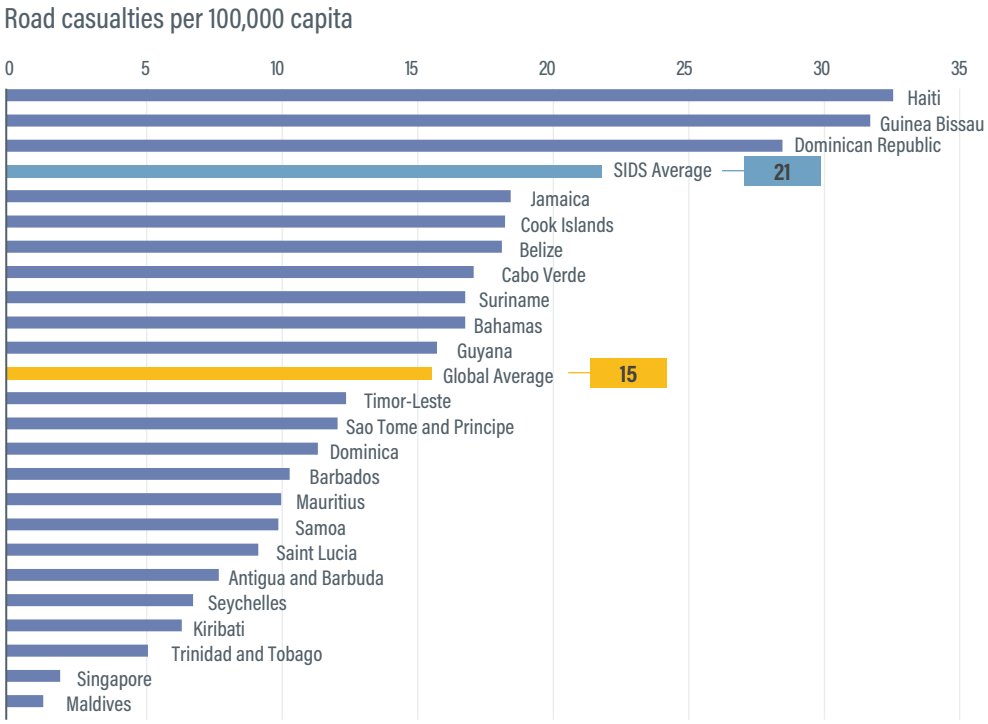
Per capita transport greenhouse gas emissions in tonnes, 2023 in tonnes CO_2 equivalent



In 2023, SIDS had per capita transport emissions of 0.63 tonnes — below the global average of 0.89 and close to Asia's 0.61. However, emissions varied widely, with the Maldives, Cook Islands and Seychelles standing out due to high tourism-related demand.

Source: See endnote 28 for this section.

FIGURE 5. Road casualties per 100,000 people in SIDS, 2021



On average, SIDS have per capita road fatality rates above the global average of 15 deaths per 100,000 people. Among those with available data, half of the countries have rates below the global average.

Source: See endnote 33 for this section.

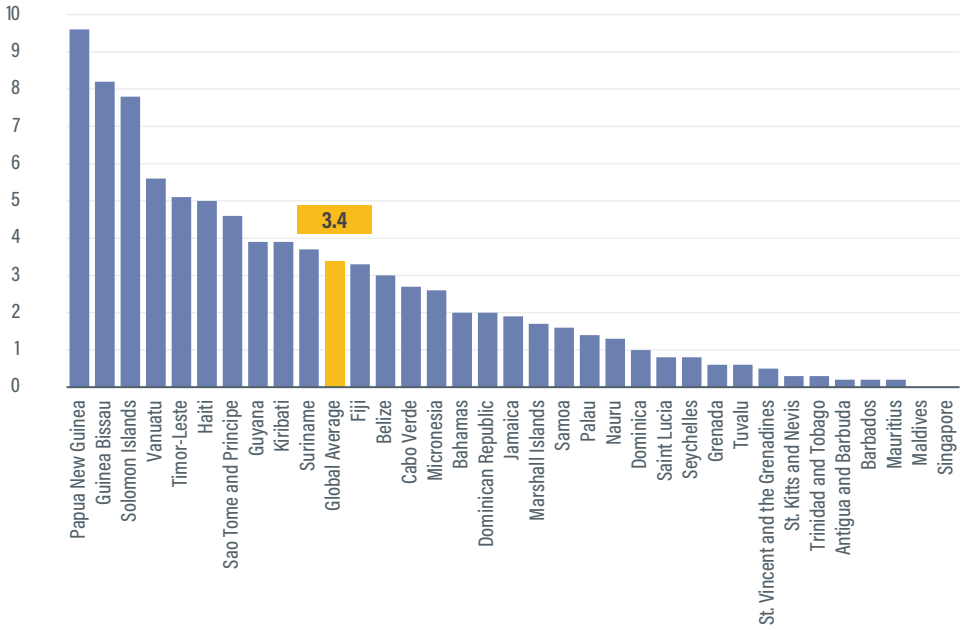
Transport-induced air pollution contributed around 3.4% of total air pollutant emissions in SIDS, resulting in 0.86 premature deaths per 100,000 people in 2019, well below the global averages of 6% of air pollutant emissions and 2.3 premature deaths.[32]

Road safety remains a persistent public health challenge in SIDS, where road deaths averaged 21 casualties per 100,000 people in 2021, above the global average of 15.0 casualties (Figure 5).[33]

The impacts of climate change have been especially severe in SIDS due to the low resilience of infrastructure as well as geographical characteristics such as remoteness, mountainous terrain, and low-lying coastal areas, which make them more vulnerable to external shocks and disruptions.[34] Impacts such as sea-level rise, increased storm intensity and frequency, heavy rainfall and flooding, and excessive heat lead to infrastructure damage, economic and cultural loss, loss of lives and livelihoods, loss of biodiversity and forced displacement.[35] More intense rainfall can trigger landslides, wash out roads, and damage bridges, especially in mountainous areas. Smaller or less economically developed SIDS tend to face greater challenges in building and maintaining infrastructure.[36]

FIGURE 6. Physical infrastructure risk in SIDS, 2025

Physical Infrastructure Risk (0-10, higher value means higher risk), 2025 scores



The impacts of climate change tend to be more severe in SIDS than in other countries due to inadequate resilient infrastructure and geographical characteristics. In 2023, one-third of SIDS faced infrastructure risk levels above the global average of 3.4.

Source: See endnote 37 for this section

- As of 2025, the risk to physical infrastructure – measured on a scale of 0-10, with 10 being the greatest risk – was much higher in Papua New Guinea (9.6), Guinea-Bissau (8.2) and Solomon Islands (7.8) than in other countries in their regions (Figure 6).[37]
- Lower physical infrastructure risk scores occurred in SIDS with stronger economies, such as Maldives and Singapore (both at 0) and Antigua and Barbuda, Barbados and Mauritius (all at 0.2).[38]

SIDS account for two-thirds of the countries that suffer the highest relative losses from natural disasters globally – between 1% and 9% of their GDP each year.[39] Between 1970 and 2020, SIDS lost USD 153 billion due to natural hazards, equivalent to 0.9% of their GDP during this period.[40] Climate change can especially impact urban areas and tourism infrastructure: a 25% reduction in tourism in SIDS could result in losses of USD 7.4 billion or 7.3% of GDP.[41] Urban transport infrastructure faces increased flooding, strain on energy systems, and heat stress, as rising temperatures affect road surfaces, potentially leading to pavement deterioration and higher maintenance costs. In lowland areas and river valleys, intensified flooding events (including flash floods), storm surges, and landslides can damage culverts, roadways, bridges, and other water crossings, leading to connectivity challenges and community isolation.[42]

- In Fiji, damage to transport infrastructure from flooding in 2009 totalled USD 28.5 million (43% of total infrastructure damage); transport damage from Cyclone Winston in 2016 totalled USD 63 million (61% of total infrastructure damage); and Cyclone Yasa in 2020 led to significant infrastructure damage.[43]
- Flooding in the Solomon Islands in 2024 led to USD 12 million in transport damage, or 90% of the country's total infrastructure damage.[44]
- After Cyclone Seroja in 2021, Timor-Leste spent an estimated USD 245 million on efforts to make transport infrastructure more resilient, including through improved standards to reduce disaster risks.[45]

Many SIDS have low shares of paved roads, making their road networks vulnerable to climate impacts and limiting access to alternative routes when disruptions occur.[46] Low-lying coastal roads are increasingly threatened by saltwater intrusion, flooding and erosion from the combined impacts of cyclones, storm surges, and sea-level rise, rendering them impassable or requiring frequent repairs.[47]

Climate-induced disruptions hinder the accessibility and connectivity of aviation and maritime transport for both passengers and freight, as stronger storms and changing sea conditions affect shipping lanes and infrastructure

that is vital for trade and transport. Low-elevation airports and seaports are susceptible to sea-level rise and storm surges, leading to inundation and erosion that can submerge runways and docks – causing disruptions to emergency services, domestic and international air travel, and shipping. Most SIDS depend on small vessel transport, which can become more hazardous and unpredictable in the face of riskier seas and more intense storms.[48]

Climate change affects communities differently across SIDS, with poverty and inequality expected to worsen in many places due to disproportionate impacts on women and children as well as increased health risks from undernutrition and vector-borne disease.[49] Increasing storm surges can contaminate freshwater reserves, damage crops and flood homes. When infrastructure is damaged and roads become impassable, rural isolation affects people's access to markets, health care and education.[50]

Policy and investment developments

SIDS have developed and implemented a range of policy actions to respond and adapt to climate change and evolving transport demand. Adaptation measures for the transport sector include increased infrastructure resilience and early warning systems, while mitigation policies focus mainly on electric mobility in urban areas and sustainable maritime transport. Additionally, SIDS have sought to strengthen public transport, walking and cycling.

- Maldives has introduced several measures that are not common across most SIDS, including vehicle-free days and islands, shifting work hours to reduce travel demand and using solar-powered vessels.[51]
- Palau has set specific targets for walking and cycling (adding 5 kilometres of pedestrian and bicycle lanes per year) and public transport expansion (adding two buses annually), while linking its mitigation efforts to conditional international support.[52]
- Timor-Leste has limited imports of older used vehicles and is considering a vehicle scrappage scheme to replace old vehicles used for taxis.[53]

Many SIDS have prioritised sustainable maritime transport connectivity.

- Dominica plans to develop detailed emission inventories for road and maritime transport and to assess hydrogen-powered shipping as part of its transition strategy to a low-carbon transport system.[54]
- Kiribati has developed a decarbonisation plan that supports transitioning to fuel-efficient outboards, implementing zero-impact cruise liners, investing in low-carbon ships and using biofuel blends.[55]

In 2023, fossil fuel subsidies in SIDS totalled USD 761 per capita, slightly below the global average of USD 813 per capita.[56] Several Pacific SIDS adopted the 2023 Port Vila Call to Action, which aims for a "just and equitable transition towards a fossil fuel free Pacific".[57] Fossil fuel subsidies as a share of GDP in 2023 were relatively low in Cabo Verde (0.4%), Papua New Guinea (1%), and Kiribati (1.8%) but higher in the Bahamas (5.8%), Fiji (6.5%), Tonga (6.6%), Trinidad and Tobago (14.1%) and Suriname (19.5%).[58]

In their Nationally Determined Contributions (NDCs) towards reducing emissions under the Paris Agreement, SIDS have outlined and implemented measures to mitigate their transport emissions, including through the adoption of new technologies. Measures in first- and second-generation NDCs (submitted between 2015 and 2024) included switching to advanced vehicle and vessel technologies for road and maritime transport (such as electric vehicles, renewable hydrogen fuels and biofuels) and retrofitting vessels for low-carbon fuels. For non-motorised urban transport, Fiji, Kiribati and Timor Leste targeted the promotion of cycling and electric bikes, public transport investments through public-private partnerships, the use of biofuel blends and developing infrastructure for clean energy vehicles.[59]

- Dominica has offered full tax exemptions on electric vehicles since 2019 to accelerate uptake.[60]
- Grenada has introduced biofuel blends, implemented petrol and diesel taxes, and applied vehicle fuel efficiency standards through incentives to reduce transport emissions.[61]
- Nauru is conducting technical assessments for low-carbon transport options and seeks to achieve 30% energy savings, including through public campaigns to promote energy-efficient transport behaviour.[62]
- Papua New Guinea is aiming for 50% carbon neutrality by 2030 and 100% by 2050.[63] To reduce its transport emissions, it is focusing on electric mobility, biofuels and other cleaner fuels, vehicle replacement programmes, low-carbon fuel standards, incentives for energy-efficient vehicles, a shift in freight to rail or waterways, and tracking efficiency measures for fuels and carbon emissions.[64]
- The Solomon Islands aims for net zero greenhouse gas emissions by 2050 and is setting targets for electric vehicle sales, developing charging infrastructure, introducing vehicle efficiency standards, exploring the use of biofuels, and implementing zero-emission vessels and port electrification.[65]
- In Tonga, transport mitigation efforts include a 2% annual efficiency gain target for new light-duty vehicles and a goal for 10% of newly registered light-duty vehicles to be electric or hybrid by 2030.[66]

All six of the third-generation NDCs submitted by SIDs as of 1 August 2025 featured actions aimed at reducing greenhouse gas emissions from transport.[67] The third-generation NDCs of Belize, Marshall Islands and Saint Lucia featured specific targets for mitigating transport emissions, while those for Maldives, Niue and Singapore did not.[68]

- Belize's NDC targets reducing transport emissions by 127 gigagrams of CO_2 equivalent by 2030 and 312 gigagrams by 2035.[69]
- The Marshall Islands' NDC features a target to reduce domestic shipping emissions 40% below 2010 by 2030 and to achieve complete decarbonisation by 2050.[70]
- Saint Lucia's NDC commits to a 22% reduction in greenhouse gas emissions from transport and energy by 2035, compared to 2010 levels.[71]

SIDS have responded to the impacts of climate change by developing and implementing adaptation measures for transport infrastructure – including climate-resilient roads, transport emergency or disaster plans, National Adaptation Plans (NAPs), and disaster notification and early warning systems. Some SIDS have reviewed and revised laws, regulations and standards to improve the climate resilience of transport infrastructure.

- Fiji is fortifying or replacing jetties to withstand category 4 cyclones or above.[72] It is also investing in a USD 200 million project to improve domestic transport connectivity, focusing on replacing critical bridges to enhance resilience against climate change and disasters, with funding from the Asian Development Bank and the World Bank.[73]
- Kiribati is retrofitting coastal infrastructure – including roads, causeways and jetties – to withstand climate threats and is enhancing air and sea transport infrastructure to better withstand climate impacts, maintain connectivity, and ensure food and water security.[74]
- Marshall Islands' 2023 NAP emphasises careful design, construction and maintenance of public facilities – including roads and runways – to improve overall infrastructure resilience.[75]

(See Spotlight on Transport in NAPs for more examples from SIDS.)

- Timor-Leste is developing a transport master plan to build sector resilience and reduce emissions, while conducting a national infrastructure assessment and audit to improve investment planning and implementing climate-proofed infrastructure development.[76]

Some SIDS are developing climate-resilient codes and standards for transport infrastructure and pursuing airport rehabilitation to meet international and climate-resilient standards.

- Kiribati is formulating marine spatial plans for effective management, considering climate change and disaster risks.[77]
- Papua New Guinea is updating its road design standards to include climate change considerations and conducting risk and vulnerability assessments of transport assets, as well as considering the relocation of public facilities and infrastructure in post-disaster reconstruction.[78]
- Solomon Islands is committed to enhancing transport resilience, focusing on road and wharf rehabilitation projects, with a total cost of almost USD 171 million.[79]

Global policy dialogues and inter-governmental processes have created opportunities for greater co-operation across SIDS. These mechanisms have supported the development and implementation of relevant policies to improve transport and climate change mitigation and adaptation through greater partnerships with stakeholders (including international and regional organisations, multilateral development banks and the private sector) and among countries with common priorities and challenges.

The United Nations (UN), recognising the special needs and characteristics of SIDS and their sustainable development challenges, has initiated various programmes and efforts to help mitigate vulnerabilities.

- The 1992 UN Conference on Environment and Development (Earth Summit) defined SIDS as a distinct group of developing countries with specific economic, social and environmental vulnerabilities.[80]
- In 1994, the Programme of Action for the Sustainable Development of Small Island Developing States (Barbados Programme of Action) was finalised and adopted at the first global conference on the Sustainable Development of Small Island Developing States.[81]
- The Programme of Action was reviewed and revamped in 2005 through the Mauritius Strategy for the Further Implementation of the Programme of Action for the Sustainable Development of Small Island Developing States.[82]
- In 2014, the Third International Conference on Small Island Developing States in Samoa provided the international community with an opportunity to revisit the vulnerabilities of SIDS in light of changing global circumstances and new insights, including in relation to the impacts of climate change.[83]

Partnerships in action

- The **Fourth International Conference on Small Island Developing States**, held in Antigua and Barbuda in May 2024, focused on reviewing SIDS' sustainable development progress and proposed a new decade of partnerships and solutions to supercharge their path to resilient prosperity.[84]
- The **Asia-Pacific Regional Dialogue on Sustainable Maritime Connectivity**, created in 2021, brings together countries and relevant stakeholders to address challenges in maritime transport, including technology gaps among countries and the rising climate mitigation and adaptation burden on SIDS.[85]
- In 2024, the **World Bank**, supported by the **Global Facility to Decarbonize Transport** (**GFDT**), released the two-part *Guide to Mobility for Livable Pacific Cities*, which has a focus on mobility within the Pacific SIDS and comprises "Priority Actions for a Car-Lite Future" and a "Practitioners' Handbook to Implement the Priority Actions". The guide is the result of a comprehensive study and workshops by Leaders in Urban Transport Planning (LUTP) in Fiji, Kiribati, Solomon Islands and Tonga.[86]

3.1
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