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Europe Regional Overview

TRANSPORT, CLIMATE AND SUSTAINABILITY GLOBAL STATUS REPORT - 4TH EDITION

SLOCAT Partnership on Sustainable, Low Carbon Transport

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.

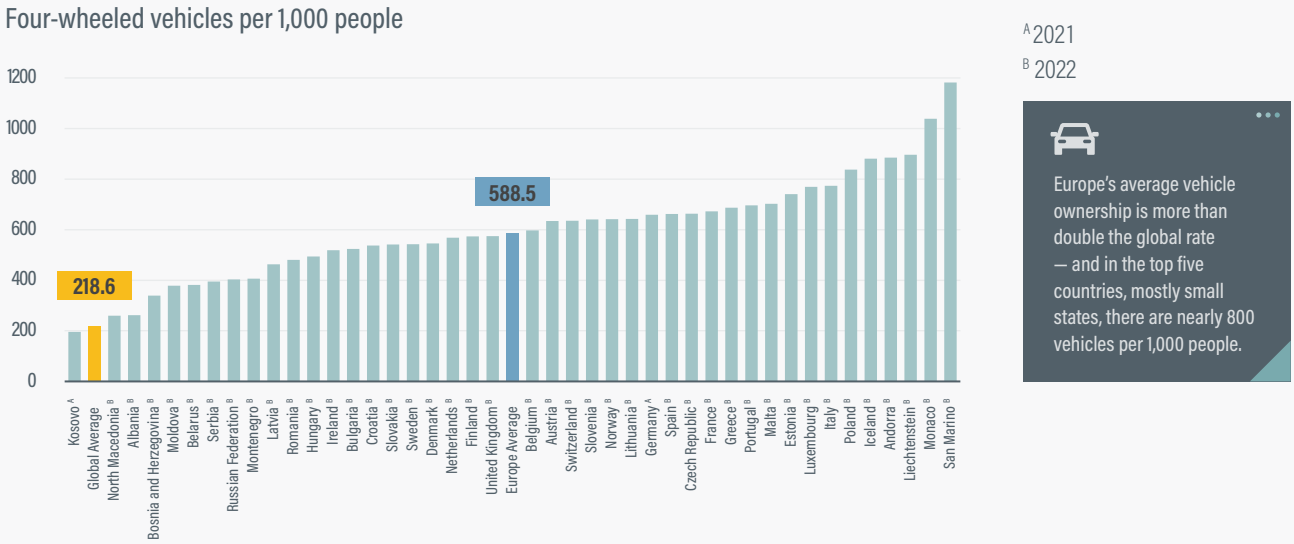
- Since September 2024, Austria's national railway company ÖBB has operated "NightJet" night train services between Munich and Bologna, Salzburg and Florence, and Vienna and Rome.[46]
- A daytime high-speed train has linked Paris and Berlin since December 2024.[47]
- Germany's Deutsche Bahn and French 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]

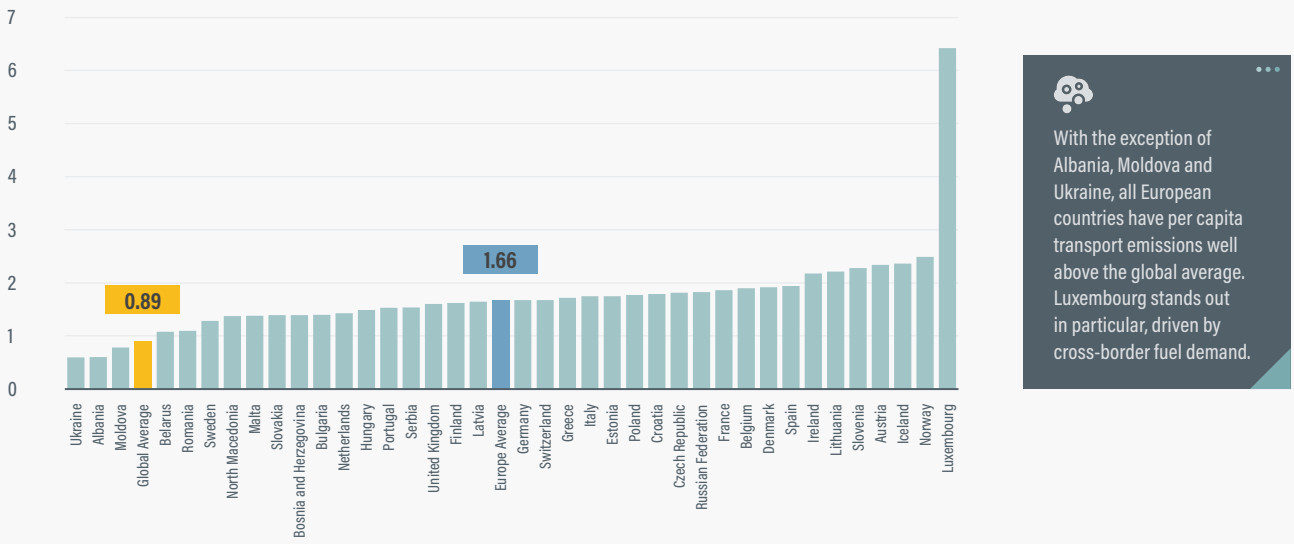
Sustainability and climate trends

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,

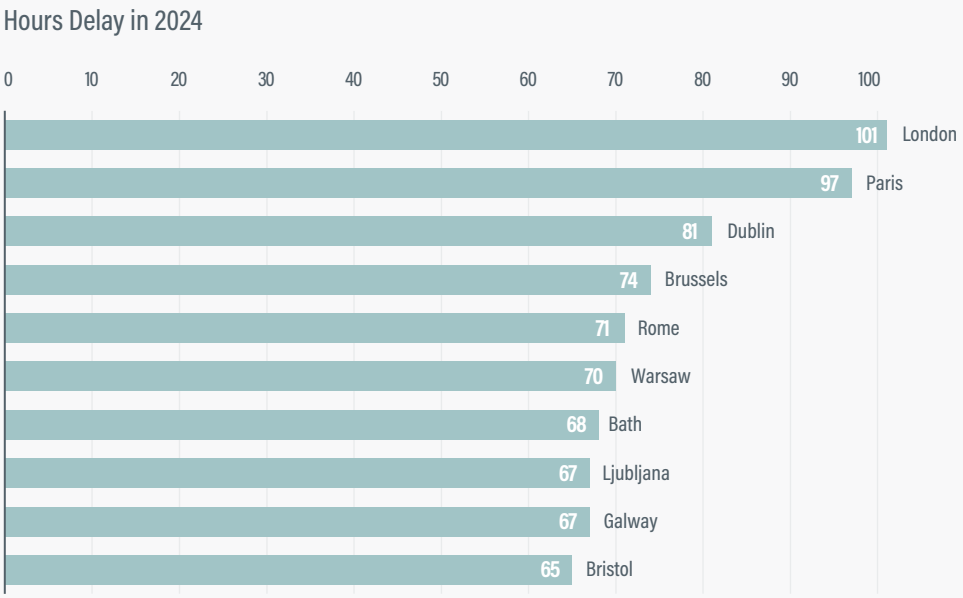
FIGURE 2. Per capita transport greenhouse gas emissions in Europe, 2023



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]

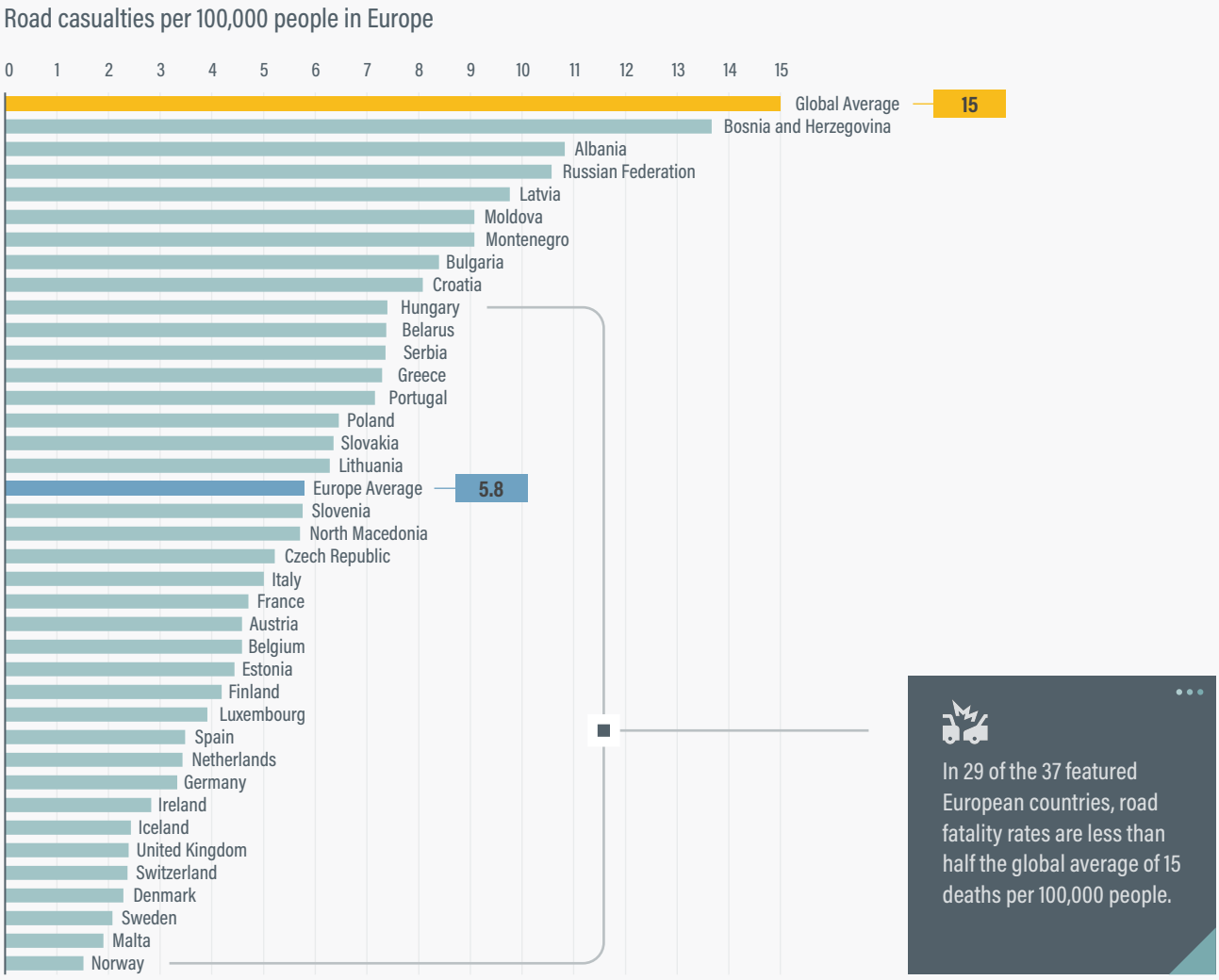
Maritime transport accounts for 3-4% of the EU's total CO_2 equivalent emissions.[105] **The maritime sector contributed more than a quarter (26%) of all methane emissions from the EU transport sector in 2022.**[106] EU emissions of methane – a greenhouse gas roughly 80 times more potent than CO_2 at 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[i], 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[ii] by 2020, as set in Renewable Energy Directive 2009/28/EC.[185] To support decarbonisation, the transition to

i Heavy-duty vehicles include trucks (over 3.5 tonnes), buses and coaches.
ii 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.

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