1.4

Europe Regional Overview

Demographics

Population size:	Population growth:	Urban population share:	Urban population growth:	GDP per capita:	GDP growth:
747 million	**+2%**	**74%**	**+4%**	**USD 30,496**	**+13%**
(2020)	(2010-2020)	(2020)	(2010-2020)	(2019)	(2010-2019)

Sources: See endnote 1 for this section.

Key findings

Demand trends

- In two-thirds of European countries, the growth in car ownership between 2005 and 2015 was below the global average; however, average rates of car ownership in 2015 were nearly three times the global average.

- The share of electric vehicles among new car registrations in Europe increased from 2% in 2018 to 3.5% in 2019, but market penetration remains relatively low.

- Passenger transport demand in the European Union (EU) reached a record high in 2018, with car travel accounting for more than 70% of passenger demand, and rail travel for nearly 7%.

- Freight transport demand increased 11% from 2010 to 2018, with road transport accounting for 73% of this demand, rail for 17% and inland waterways for 6%.

- Tram and metro usage reached an all-time high in the EU-27 in 2018, with growth of more than 10% since 2010. Demand for urban and inter-city buses remained stable during this period.

Emission trends

- Transport is responsible for nearly a quarter of EU greenhouse gas emissions and is the region's only sector without significant emission reductions since 2018.

- Transport CO_2 emissions in Europe remained roughly stable between 2010 and 2019 and accounted for around 18% of global transport CO_2 emissions in 2019.

- Half of all European countries reduced their transport CO_2 emissions between 2010 and 2019, but more than 20% of countries exceeded the global average growth in transport emissions.

- Europe has the cleanest vehicle fleet among world regions; however, average CO_2 emissions from new cars and vans increased between 2017 and 2019, exceeding the 2021 emission standards for passenger cars by more than 25%.

Overview

Demand for freight and passenger transport in Europe grew at relatively low rates (1-2%) in 2018, but the region's per capita transport emissions remained high (although still well below North America's).[2] Europe's transport networks are well developed, with a rich set of public transport systems, walking and cycling infrastructure, and demand management policies. Transport policies aimed at climate change adaptation are also taking shape.

The European Green Deal, which aims to align EU policies with the region's objective to achieve climate neutrality by 2050, includes the goal of "accelerating the shift to sustainable and smart mobility".[3] This led to the adoption in 2020 of a strategy and action plan that aims to provide more affordable, safe, competitive, accessible, healthier and cleaner mobility options, with the goal of cutting EU emissions from road, rail, aviation, and waterborne transport 90% by 2050.[4] Despite the significant effort within Europe to implement planning approaches to ambitiously reduce transport-related emissions, the region has demonstrated few achievements in effective climate change mitigation.

The COVID-19 pandemic has impacted European transport in numerous ways. In the early months of 2020, most European countries experienced sharp declines in air passenger transport, and the region's long-distance, regional and international passenger rail services also plummeted *(see Box 1)*.[5]

Demand trends

In two-thirds of European countries, the growth in car ownership between 2005 and 2015 was below the global average; however, average rates of car ownership in 2015 were nearly three times the global average *(see Figures 1 and 2)*.[6] For example, high car ownership in **Luxembourg** is driven by low taxation of transport fuels, a large number of company cars and high housing prices (which has led to greater numbers of cross-border workers).[7] Government policies, such as the removal of parking spaces in **Amsterdam**, reflect efforts to reduce car ownership and ease congestion in rapidly motorising cities and regions.[8]

- In 2019, automobile production in **Germany** fell to its lowest level since 2010, coinciding with rapidly evolving vehicle technologies (e.g., electric and autonomous vehicles) and tighter emission restrictions.[9]
- A 2019 survey in **Finland** found that nearly 20% of citizens plan to give up their cars by 2024 in favour of public transport, shared bicycles or carpooling.[10]

New vehicle sales

- **13% increase** in total new vehicle sales (2010-2019)
- **10% increase** in new passenger car sales (2010-2019)
- **Over 17.5 million** passenger cars sold (2019)
- **33% increase** in new commercial vehicle sales (2010-2019)
- **2.7 million** new commercial vehicles sold (2019)

Source: See endnote 11 for this section.

Figure 1. Car ownership rates per 1000 people in Europe, 2015
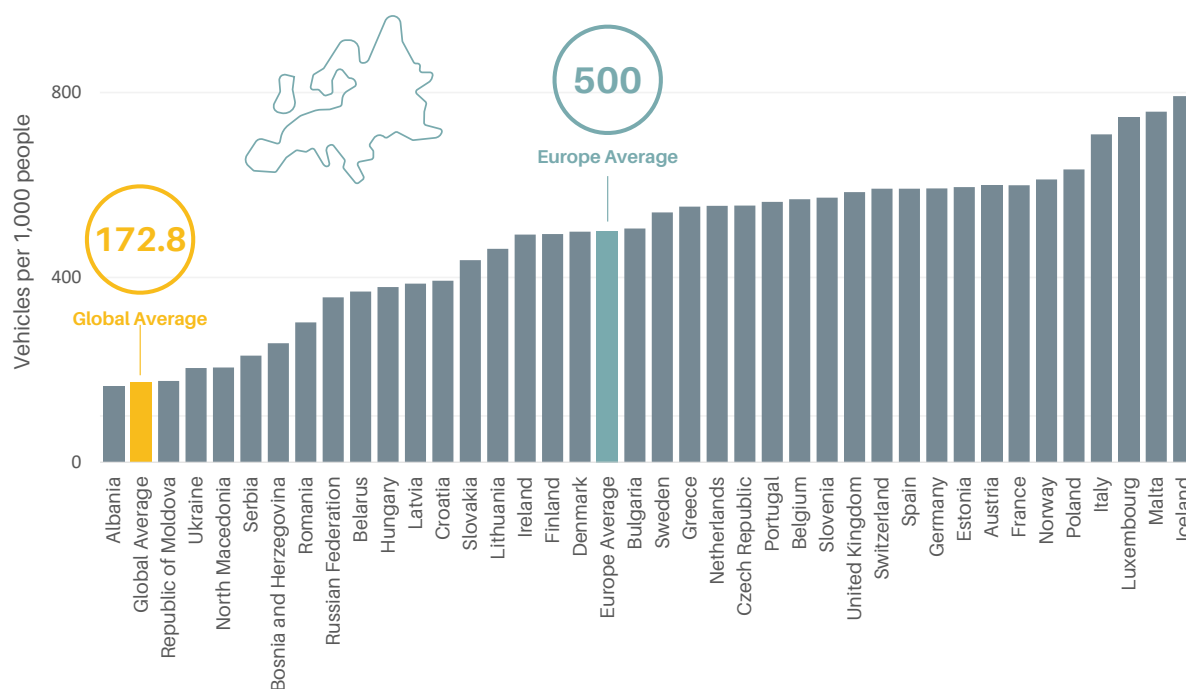
Source: See endnote 6 for this section.

Figure 2. Growth in car ownership in Europe, 2005-2015
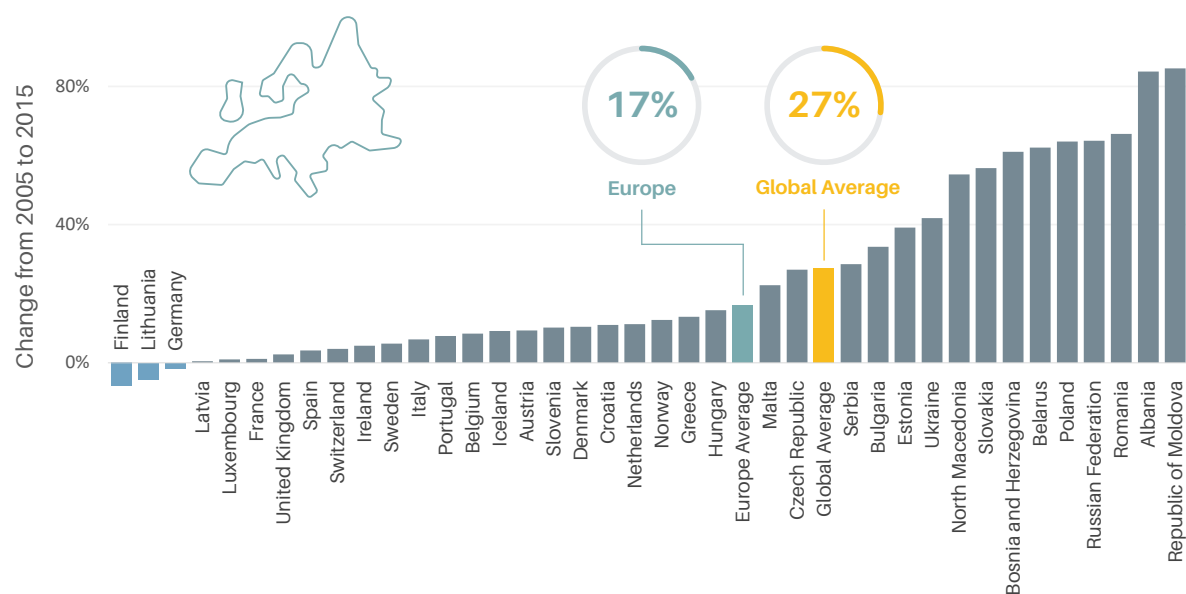
Source: See endnote 6 for this section.

The share of electric vehicles among new car registrations in Europe increased from 2% in 2018 to 3.5% in 2019, but market penetration remains relatively low.[12] Electric vehicle registration shares were highest in **Norway** (56%), **Iceland** (19%), the **Netherlands** (16%), **Sweden** (12%) and **Switzerland** (11%).[13] The demand for electric vans increased from 0.8% of total vehicle registrations in 2018 to 1.3% in 2019.[14]

Passenger transport demand in the EU reached a record high in 2018, with car travel accounting for more than 70% of passenger demand, and rail travel for nearly 7%.[15] Car travel grew 6.7% between 2010 and 2018, while rail travel increased at more than twice that rate (13.6%).[16] Demand for passenger rail varied among Member States, with increases of up to 30% reported in the **Czech Republic**, **Luxembourg**, the **Slovak Republic** and the **United Kingdom**, while **Bulgaria**, **Croatia**, **Greece** and **Slovenia** reported stable or declining ridership.[17] In 2017, high-speed rail accounted for 27% of passenger rail transport in the EU overall, and for more than half in both France and Spain.[18]

Freight transport demand increased 11% from 2010 to 2018, with road transport accounting for 73% of this demand, rail for 17% and inland waterways for 6%.[19] The main contributors to the increase in demand between 2010 and 2018 were road freight (up 9.7%) and rail freight (up 12.9%), while inland waterway freight fell 13.1%.[20]

- Passenger transport activity: up 9% during 2010-2018, to 5,916 billion passenger-kilometres[21]
- Freight transport activity: up 11% during 2010-2018, to 3,353 billion tonne-kilometres[22]

Tram and metro usage reached an all-time high in the EU-27 in 2018, with growth of more than 10% since 2010.[23] Demand for urban and inter-city buses remained stable during this period.[24] Overall, however, tram and metro usage accounted for just 1.7% of total passenger-kilometres in 2018, while buses accounted for 8.5%.[25]

- Cities in **Germany** pursued various measures to improve public transport networks in 2019: **Berlin** announced that it would spend EUR 28 billion (USD 33 billion) on improving public transport until 2035, and **Augsburg** introduced the country's first "mobility flat rate", enabling local consumers to enjoy bus, car sharing, bicycles, etc. for a set monthly rate of EUR 79 (USD 95).[26]
- In 2018, **Estonia** became the world's first country to make all public transport free in an effort to reduce car traffic, followed by **Luxembourg** in 2020.[27]
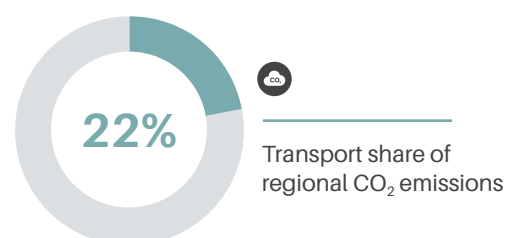
Emission trends

Transport is responsible for nearly a quarter of EU greenhouse gas emissions and is the region's only sector without significant emission reductions since 2018.[28] The EU must reduce transport emissions 90% by 2050 to achieve climate neutrality as targeted under the European Green Deal.[29]

Regional CO_2 emissions

- Total transport CO_2 emissions (2019): **1,226 million tonnes**
- Share of global transport CO_2 emissions (2019): **18%**
- Per capita transport CO_2 emissions (2019): **1.64 tonnes**
- Transport CO_2 emissions per USD 10,000 GDP (2019): **0.54 tonnes**

22%

Transport share of regional CO_2 emissions
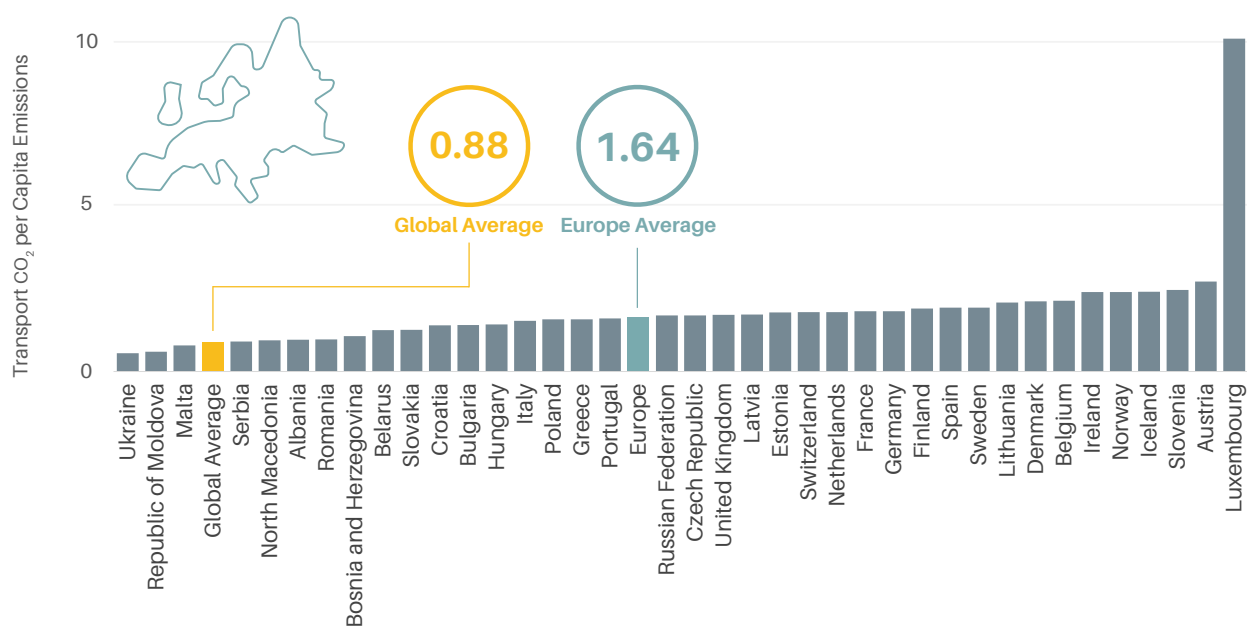
Source: See endnote 30 for this section.

Transport CO_2 emissions in Europe remained roughly stable between 2010 and 2019 and accounted for around 18% of global transport CO_2 emissions in 2019.[31] Although transport CO_2 emissions in Europe have not grown considerably, they remain far from the substantive reductions required to achieve the region's 2050 target for carbon neutrality.[32] The per capita transport CO_2 emissions of nearly every European country are above the global average *(see Figure 3)*.[33] Luxembourg is shown as an outlier as data is based on fuel consumption, which is extremely high due to the low fuel prices that attract citizens from neighbouring countries.[34]

Half of all European countries reduced their transport CO_2 emissions between 2010 and 2019, but more than 20% of countries exceeded the global average growth in transport emissions *(see Figure 4)*.[35] The region includes examples of both rapid growth and sharp declines in transport CO_2 emissions during this period.

- Transport emissions in **North Macedonia** have surged mainly because of rising car ownership. This has led to a very high carbon intensity in transport, especially considering the prevalence of old vehicles with low or no emission controls, and the limited provision of public transport.[36]
- In contrast, the sharp decline in transport emissions in **Greece** is explained by the economic crisis and subsequent drop in fuel consumption during 2009-2012; since 2013, however, emissions have been continually increasing at a low rate (not including 2020).[37]

Europe has the cleanest vehicle fleet among world regions; however, average CO_2 emissions from new cars and vans increased between 2017 and 2019, exceeding the 2021 emission standards for passenger cars by more than 25%.[38] Sport utility vehicles (SUVs) accounted for nearly 40% of new car sales in Europe in 2019, while electric vehicles accounted for only 2.3%.[39] European car industry sales increased in 2019, unlike industry sales in both **China** and the **United States**.[40]

Figure 3.   Per capita transport CO_2 emissions in Europe, 2019

Source: See endnote 33 for this section.

Figure 4.   Change in transport CO_2 emissions in Europe, 2010-2019
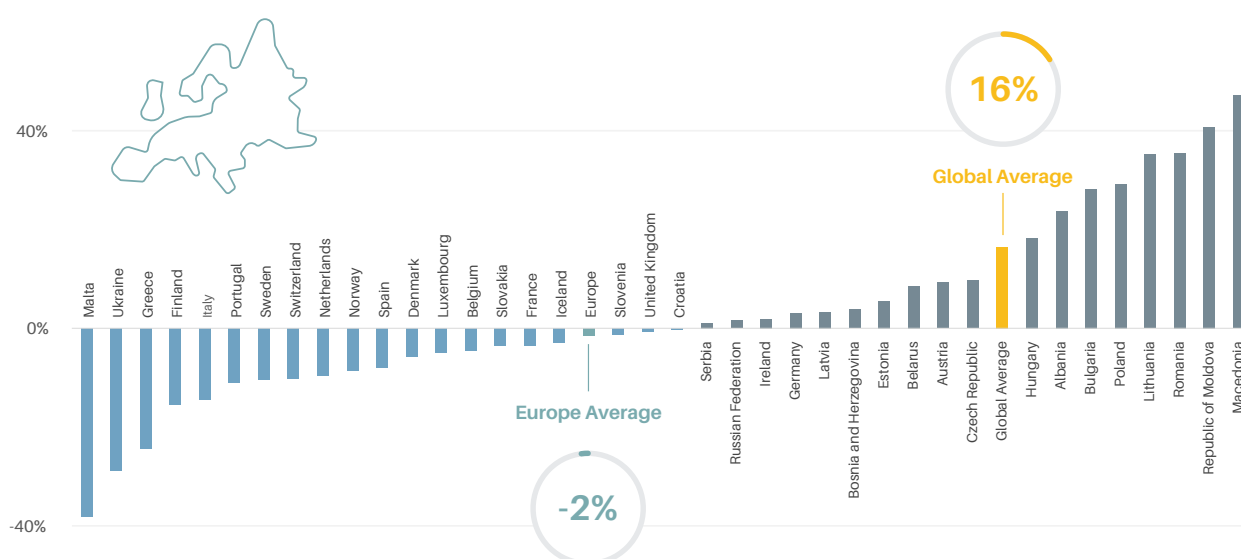
Source: See endnote 31 for this section.

- Average emissions of new cars registered in the EU totalled 122.4 grams of CO_2 per kilometre in 2019, well above the target of 95 grams for 2021 and higher than the 2018 average.[41]
- Sales of diesel vehicles as a share of total vehicles sold in the EU fell from 36% in 2018 to 31% in 2019.[42]
- The **EU** adopted new CO_2 emission performance standards for cars and vans in 2019 and set a target for 35% zero- and low-emission vehicles in new registrations by 2030 – measures that are projected to reduce the region's CO_2 emissions from road transport 23% by 2030 (compared to 2005 levels).[43]

Policy measures

Strong political will in the region has paved the way for Europe to be an influential leader in global action on transport and climate change. The EU encourages strict fuel economy requirements and the use of advanced biofuels. At a national level, the majority of countries aim to increase investments in public transport, walking and cycling infrastructure.

Europe offers many tested transport solutions (including trams, high-speed rail, shared mobility systems, low-emission zones, etc.) that can be and have been replicated by peers in other regions and adapted by countries and cities across geographies in different socio-economic realities.

Individual European countries and the EU have established ambitious transport decarbonisation roadmaps to address rising transport emissions, with the aim of achieving climate neutrality by 2050. The EU played a key role in negotiating the Paris Agreement and offers examples of ambitious climate change policies. The region is uniquely positioned to influence climate action in other countries because of its economic weight, ability to craft common legislation among 27 Member States and role as the world's largest provider of international development assistance.[44]

- The **European** Green Deal proposes actions for sustainable, low carbon transport with key priorities including increasing multimodal passenger and freight transport efficiency, fostering automated and smart mobility, ending fossil fuel subsidies, extending emission trading to shipping and ramping up sustainable fuels.[45]
- Many cities in **Europe** have joined the Global Covenant of Majors for Climate and Energy to jointly tackle both climate change mitigation and adaptation and to support implementation of the EU target to cut greenhouse gases 40% by 2030.[46] The Covenant commits more than 10,000 cities worldwide to submitting concrete action plans as well as strategies to track their implementation.[47]
- **Scotland's** Green New Deal of 2019 included GBP 500 million (USD 700 million) for improved bus priority lanes to tackle congestion and increase usage.[48] In 2020, the **UK** Government announced a GBP 5 billion (USD 7 billion) boost for greener transport, transforming bus services across the country with simpler fares, bus fleet modernisation, improved routes and higher frequencies.[49]

- The EU's Long-Term Strategy for implementation of the Paris Agreement offers transport innovations by using "alternative means of transport, connected and automated driving combined with the roll-out of electric vehicles and enhanced use of alternative fuels".[50]
- A large share (83%) of international transport experts view the **EU** as the most influential major international organisation to help increase co-ordination and drive decarbonisation in the transport sector.[51]

Many European countries have embraced integrated mobility planning to reduce urban transport emissions, and in 2020 the region accounted for 68% of global sustainable urban mobility plans (SUMPs).[52] During the year, SUMPs expanded to seven cities in Ukraine.[53]

- In 2019, **Italy** launched an initiative to support the development of SUMPs in at least 64 municipalities.[54]
- Paris, **France** set several targets in 2019 aimed at establishing a "15-minute city", where all essential needs are within a short walk or bike ride.[55] Only battery electric and hydrogen fuel cell vehicles will be permitted to enter the city's low-emission zone by 2030.[56]
- **Ukraine's** comprehensive package of mobility reform measures offers a model for other emerging and transitional economies and includes the expansion of SUMPs, targets for alternative fuels and electric vehicles, and tax waivers.[57]

Electric mobility is a key target of EU policies for a "green transition" and post-pandemic recovery, and several European countries have announced progressive bans on sales of fossil fuel vehicles.[58] Although electric vehicle sales are increasing rapidly in the region, market penetration remains low at 3.5% in 2019.[59] Initiatives to boost electric mobility have focused mainly on technological optimisation and market development of battery-powered vehicles.

- Bans on sales of fossil fuel vehicles will enter into force in **Norway** by 2025; in **Denmark, Iceland, Ireland**, the **Netherlands, Slovenia, Sweden** and the **United Kingdom** by 2030; and in **France, Portugal** and **Spain** by 2040.[60]
- **Volkswagen** announced that it would launch its final generation of internal combustion engine vehicles in 2026, and Volvo pledged to manufacture only electric vehicles by 2030.[61] Europe's seven largest truckmakers have agreed to phase out the use of traditional internal combustion engines.[62]
- In 2019, **France** launched a massive fleet of 10,000 electric bicycles in Paris, along with 800 new electric buses to help reduce smog.[63]
- **Portugal** developed an electric bike subsidy scheme in 2019, supporting the purchase of 1,000 e-bikes.[64] In the **Netherlands**, e-bike sales grew roughly 35% in 2019, while sales of regular city bikes fell 4.1% in the first half of the year.[65] Across the EU, 3.7 million e-bikes were sold in 2019, far outpacing the half-million electric vehicles sold that year.[66]

Europe has emerged as a frontrunner in implementing low-emission zones as an effective strategy to tackle climate change and improve air quality; as of 2020, these zones were present in at least 261 European cities.[67] In a 2020 UK poll, 74% of respondents said they want businesses to "do more to cut pollution and traffic after the lock down so that neighbourhoods don't go back to the way they were".[68] *(See Section 3.2 Sustainable Mobility and Transport Demand Management.)*

- In 2019, Paris, **France** banned the use of all diesel cars manufactured before 2006, and by 2030 only zero-emission vehicles will be allowed to enter the city's low-emission zone.[69]
- In 2020, Krakow became the first city in **Poland** with a low-emission zone.[70]
- London, **UK** implemented an ultra-low emission zone in April 2019, charging polluting cars and trucks an additional fee for entering the already existing congestion zone.[71]
- **Spain** enacted a law in 2020 to implement low-emission zones in all urban areas with populations larger than 50,000.[72] Barcelona, which created a low-emission zone that includes neighbouring communities, aims to cut the number of cars in the city by 125,000 within three years, and air pollution by 20% within four years.[73]
- Under the umbrella of the Dutch National Climate Agreement, Rotterdam adopted its Roadmap Zero-Emission City Logistics strategy in 2019 and is required to implement a zero-emission zone by 2025 (along with the 30 largest cities in the **Netherlands**).[74]

With road freight movement in Europe expected to grow steadily, low carbon freight and logistics strategies are emerging to help reduce greenhouse gas emissions and to incorporate the emission goals of the European Green Deal.[75] Shifting road freight to rail and inland waterways can help cut emissions, pending measures to increase the capacity and improve management of these more efficient freight modes.[76] Two-thirds of freight companies consider decarbonisation to be a priority for the sector, and many shippers and logistics service providers have begun setting mitigation goals.[77]

- In 2019, the Alliance for Logistics Innovation and Collaboration in **Europe** (ALICE) developed the Roadmap Towards Zero Emissions Logistics 2050, aimed at decarbonising the logistic sector by defining specific stakeholder roles while promoting cleaner vehicles, trains, barges, ships and planes.[78]
- In the **Netherlands**, in 2019, the Dutch company GoodFuels and partner Reinplus Fiwado Bunker launched the country's first inland vessel that runs on 100% sustainable biofuels.[79]
- A pilot to employ a shared passenger-cargo tram to deliver goods was announced in Frankfurt, **Germany** in 2018.[80] Similar schemes have been implemented in Dresden, Germany to supply materials to the Volkswagen factory, in **Switzerland** to transport garbage and in **France** to transport goods to supermarkets.[81]
- Chronopost has used cargo bikes for last-mile delivery in Lisbon, **Portugal**, where the municipal light-duty fleet is also 100% electric.[82]

Mobility as a Service (MaaS), which originated in Europe, is more advanced in the region than elsewhere globally; however, it is still transitioning towards broad market integration and remains far from achieving maximum emission reductions.[83] Innovative mobility solutions and the use of information technologies have moved transport services towards a more user-centred paradigm. MaaS aims to make travel by private car less attractive than using collective, shared or active transport modes by integrating different fares and modes in a unified online platform, and has the potential to reduce transport CO_2 emissions up to 50%.[84]

Despite many European initiatives to deploy MaaS at a large scale, few systems are fully operational.[85] Regulation has been identified as the last resort for MaaS, including complex interlinks between different sectors. In turn, co-ordination across different levels of government is key for its spread.[86]

- In **Spain**, Bilbao's 2019 declaration "Towards a more sustainable urban mobility" encourages transport, automotive and technology companies to direct their research and development processes and new technologies towards the service of sustainable urban mobility.[87]
- European cities with either pilot or fully developed MaaS strategies include Amsterdam, Antwerp, Birmingham, Ghent, Gothenburg, Hannover, Helsinki, Mulhouse, Stuttgart and Vienna – although operation and commercialisation remain limited.[88]
- In 2019, the Nordic countries created the Nordic Mobility Innovations Platform, aiming to spread MaaS across the Nordic region, open a pan-Nordic market, and share knowledge and collaboration.[89]
- The world's first full MaaS solution, Whim, is available in Helsinki, **Finland**, allowing users to access public transport, taxis, car rentals, bicycles and e-scooters through a single app and payment system.[90]
- In Barcelona, **Spain**, a pilot of demand-responsive public transport services was implemented in areas of low population density to increase efficiency.[91]

The European Investment Bank (EIB) adopted its Climate Bank Roadmap 2021-2025 to make all of its activities Paris Agreement compatible, and is reviewing its transport lending criteria to align with the Roadmap.[92] Although only 10% of EIB activities are outside the EU, the Bank is among the world's biggest lenders on climate action, and transport is its largest area of activity.[93] The EIB's discussion and conclusions on the transport lending criteria will have global implications, due to both the sheer scale of the Bank's activities and because it is the multilateral development bank with the most ambitious climate policy.

- In 2019, the EIB announced that it would end fossil fuel financing for energy projects by 2021.[94]
- The EIB committed to unlocking EUR 1 trillion (USD 1.2 trillion) for climate action and environmental sustainable investment from 2021-2030.[95]

Box 1. Impacts of the COVID-19 pandemic on transport in Europe

Major COVID-19 impacts:

- 61% decrease in trips to public transport stations (at lowest point in 2020 versus average between 3 January and 6 February)
- 40% decline in freight transport activity (below 2019 levels)
- 60% decline in international aviation activity (below 2019 levels)
- 37% decline in domestic aviation activity (below 2019 levels)

Prolonged lockdowns and travel restrictions due to COVID-19 contributed to a 61% reduction in public transport demand in Europe in 2020, although the region also experienced a swift shift to active mobility. The largest declines in trips to public transport stations occurred during the first wave of the pandemic in March/ April and the second wave in October. Meanwhile, steep increases in cycling were recorded in many cities around Europe.

- A study of temporary cycling measures adopted in 106 **European** cities showed a 7% increase in cycling on average during the first three months after opening a temporary bike lane compared to the average of 12 months before the opening, with an estimated EUR 3 billion (USD 3.5 billion) in annual health benefits due to the implementation of pop-up bike lanes.
- The **UK's** strict lockdown imposed in March 2020 triggered a 95% decrease in subway trips in London.
- In Barcelona, **Spain**, public transport use fell 50% and car use fell 10%, whereas walking and cycling have risen to 10% above pre-pandemic levels. Other cities with significant increases in walking and cycling include Milan, **Italy;** Paris, **France;** Lisbon, **Portugal;** London, **UK;** Brussels, **Belgium;** and Krakow, **Poland**.
- A survey in 21 European cities in June 2020 found that 21% of respondents planned to cycle more and 35% planned to walk more once lockdowns were fully lifted.

By March 2020, most European countries had experienced declines in air passenger transport of 50-70% compared to 2019 levels, with Italy registering the largest drop of 85%. The region's long-distance, regional and international passenger rail services also plummeted. The demand for passenger transport fell because of both travel restrictions and reduced commuting, tourism and business travel. The dramatic decline in transport activity during lockdowns may have reduced CO_2 emissions in Europe, but these impacts were expected to be temporary. The overall decline in the region's CO_2 emissions may also be related to the contraction in Europe's GDP.

COVID-19-related declines in daily EU greenhouse gas emissions (compared to business as usual) began in early March 2020 but had almost returned to pre-lockdown levels by the end of July. An estimated 54% of the CO_2 emission reductions came from the transport sector, with the largest declines from aviation and road transport. The most affected activities during the pandemic were wholesale, retail trade, transport, accommodation and food service activities, together with the manufacturing sector. Collectively, these activities accounted for around 62% of the overall reduction in GDP and contributed to more than 93.7% of the total CO_2 emissions reduction due to their traditional high carbon intensity.

Investments have been made in Europe to encourage active modes of transport (**walking and cycling**) as an effective means to guarantee social distance and promote active lifestyles. As of May 2021, more than 2,500 kilometres of new cycling lanes had been announced, and more than 1,400 kilometres had been implemented, in 42 of the 94 biggest European cities.

The EU's COVID-19 recovery plan focuses on implementation of the European Green Deal to provide safe and healthy conditions and to restore economic growth in a sustainable, fair, strong and inclusive manner. The plan includes NextGenerationEU, an emergency allocation of EUR 750 billion (USD 900 billion) to help repair the immediate economic and social damage from the pandemic, including by boosting rail travel and clean mobility in cities and regions. Together with other targeted funding for 2021-2027, NextGenerationEU will bring the total financial firepower of the EU budget to EUR 1.85 trillion.

At the country level, **Austria**, **France**, **Germany**, **Italy** and **Spain** all announced financial measures to advance the deployment of electric vehicles and charging infrastructure during the post-pandemic period. Principles for recovery have focused on safety guidelines and integrating technology in transport to prioritise the health of workers and riders.

Source: See endnote 5 for this section.

In Practice: Additional Policy Responses

Avoid measures

Sustainable mobility planning

Europe leads in the development of sustainable urban mobility plans (SUMPs), as the European Commission encourages Member States to develop such action frameworks.[96]

In 2020, **the Netherlands** lowered its speed limit from 130 to 100 kilometres per hour to reduce emissions, and **Amsterdam** plans to strip its city centre of parking spaces (removing 10,000 in total) over the coming years, making way for bike lanes, sidewalks and more trees.[97]

In Ukraine, the cities of **Chernivtsi, Poltava, Vinnytsia and Zhytomyr,** and **Podil District of Kyiv,** developed SUMPs in 2019, and **Mykolayiv** and **Lviv** approved such plans in 2020.98 In Serbia, **Kruševacte** was the first town to develop a SUMP, forming the basis for developing others in Belgrade, Pirot and Šabac.[99]

Helsinki and **Turku** in **Finland** aim to become carbon neutral by 2035, which will have strong implications for transport systems.[100]

Shift measures

Public transport

European cities and countries have extensive public transport systems that are undergoing continuous innovations and improvements.

Barcelona, Spain introduced a new travel card in 2020 offering unlimited public transport trips within the metropolitan area for EUR 40 (USD 48) a month.[101]

A recent report concludes that reviving European international rail connections is a key measure to cut greenhouse gas emissions, as a flight from Paris to Berlin contributes six times the CO_2 emissions of train travel.[102] Night-train routes are re-emerging across Europe to replace flights, including possible connections from Stockholm to Berlin and from Brussels to Vienna.[103] *(See Section 3.10 on Aviation.)*

Shared mobility services

Dockless e-scooters are highly popular in Europe, surpassed only by **North America.** Also, many pilot projects have been launched related to autonomous vehicles (collective and individual transport).

In **Paris,** Lime e-scooters replaced 1.2 million motor vehicle trips and avoided more than 330 tonnes of CO_2 in 2019.[104] By 2030, the increasing adoption of e-scooters in **Paris** could prevent over 10,000 tonnes of CO_2 emissions and 300 kilograms of local particulate pollution annually.[105]

Germany passed a law in May 2019 permitting e-scooters only on bicycle lanes and requiring vehicle registrations.[106] Also that year, tests of fully electric, autonomous collective passenger vehicles on public roads took place in Frankfurt.[107] In 2020, **Bird** announced a partnership with an independent green supplier to offset the company's energy consumption in **Paris;** for every kilowatt-hour consumed, Bird will finance select green energy producers throughout France.[108]

Walking and cycling

As part of their urban planning, many European cities have prioritised the need for better walking and cycling infrastructure. As a "tactical urbanism" response to the pandemic, more than 2,500 kilometres of new cycling infrastructure were implemented in cities across the region since March 2020.[109]

Germany pursued a pedestrian policy that aimed to increase the share of walking trips in big cities to 41%, and in rural areas to 35%, by 2020.[110]

In 2019, **Italy's** Ministry of Environment announced an investment of EUR 500 million (USD 600 million) to expand urban and interurban cycling paths and to promote bike sharing services.[111]

In a push for improved walking and cycling, **Scotland** banned parking on pedestrian walkways in 2019 and allocated GBP 80 million (USD 110 million) for active travel in 2019-2020 as part of a climate change bill.[112]

France plans to spend EUR 350 million (USD 420 million) from 2019 to 2025 to boost cycling through better bike lanes and tax incentives.[113]

Improve measures

Fuel economy and quality

Throughout Europe, policies to enhance the efficiency of both passenger and freight vehicles have been put in place.

Under new European fuel economy standards that are focused on heavy-duty vehicles, manufacturers will have to reduce emissions from large trucks 30% by 2030. In parallel, the EU has provided incentives for zero-emission and low-emission vehicles.[114]

Starting in January 2020, **France** lowered the CO_2 emissions threshold for new cars to 110 grams of CO_2 per kilometre, above which vehicles are subjected to a penalty; this is 7 grams lower than the previous threshold implemented in January 2019.[115]

As part of its 2019 Climate Programme, **Germany** linked a vehicle's tax outlay to its emissions level; the tax is incremental and depends on the vehicle's carbon output.[116]

E-mobility

Europe was home to 20% of the sales of new electric passenger cars worldwide in 2019.[117]

In **Norway,** which leads globally in the share of electric vehicles among new car sales, 69% of new vehicles sold in the first half of 2020 were either fully electric or plug-in hybrid electric cars.[118]

In 2018, **Ukraine** announced a target of 75% electric personal vehicles by 2030. In 2019, the country extended its zero-tax benefit for purchasing an electric car (new or second-hand).[119]

Serbia introduced a tax exemption for electric and fuel cell vehicles in January 2020 and was considering more subsidies in response to rising air pollution in the country.[120]

Public electric vehicle charging points are widely available in France, Germany, the Netherlands and the United Kingdom, and the EU has encouraged Member States to boost these numbers. **Estonia** fostered the installation of a nationwide fast-charging network, ensuring a recharging point every 40-60 kilometres in dense traffic areas, and **Sweden** offers a tax break to individuals who install a charging point at home.[121]

In **Malta**, financial incentives for electric and hybrid cars and two-wheelers (including pedelecs) were successfully implemented, and the government is moving forward national regulations for electric scooter use.[122]

Renewable energy

The **EU** is the only international organisation that aims to introduce advanced biofuels, based on new sustainability criteria decided in 2018.[123]

Finland adopted a law in 2019 to gradually increase the share of biofuels for road traffic to 30% by 2029, with advanced biofuels accounting for 10%.[124]

France launched the world's first hydrogen-powered bus rapid transit system in Pau in 2019.[125] The French government raised the mandatory minimum biofuel blend in motor fuel to 7.9% in 2019 and 8.2% in 2020.[126] The company Hype rolled out 100 hydrogen fuel cell taxis in Paris in early 2019 and was targeting 600 by the end of 2020.[127]

In 2018, **Ukraine** set a target for 50% alternative fuels by 2030.[128]

In the **United Kingdom**, Chester Council approved plans in 2019 to build a biogas plant that will generate enough fuel to power up to 1,000 low carbon heavy-duty vehicles and buses per year.[129] In a UK trial of a heavy goods vehicle fuelled with biomethane, some 1,400 tonnes of CO_2 emissions were saved.[130]

Annex: Methodological Note

Data usage

Time period for data:
The report strives to utilise the most recent publicly available data and information just prior to the time of publication (as of 31 May 2021). The figures in the report were developed between September and December 2020 using the most recent data available.

Secondary data:
SLOCAT relies on secondary data and information collected and provided by SLOCAT partners and other entities and does not make use of any internal modelling tools.

Data on sustainable mobility: A call to action

The report benefits directly from data collected by a wide range of stakeholders working in different areas of transport.

Data are important for providing a comprehensive picture of the status of sustainable, low carbon transport and are essential for both policy and investment decision making. In these times of change, it is critical to upgrade data and policy collection and interpretation capacities to better understand progress and the hurdles that must be addressed.

The data limitations mentioned below are not new. Obtaining regular, reliable and public data across regions and transport modes remains an outstanding issue. When an increasing number of stakeholders are collecting data and policy information, more and better open-access data and capacity building efforts for data interpretation are supported by many multi-stakeholder partnerships in the sustainable, low carbon movement.

If you share our passion for open-access data and knowledge towards greater impact on policy and investment decision making worldwide and/or would like to contribute data or knowledge to our collective efforts on this report, **please reach out to the research team in the SLOCAT Secretariat at tcc-gsr@slocatpartnership.org**.

Specific data used in this report

Data on emissions

The data in this edition of the report point to the direct carbon emissions from transport activity; they do not cover the indirect emissions and land-use impacts associated with certain modes of transport. The report primarily utilises CO_2 emission data compiled in the Emissions Database for Global Atmospheric Research (EDGAR) from the Joint Research Centre of the European Commission, as this represents the most recent, comprehensive dataset on transport CO_2 emissions. However, this global dataset does not convey in full detail the unique situations of individual countries.

EDGAR provides estimates for fossil CO_2 emissions from all anthropogenic activities with the exception of land use, land-use change, forestry and the large-scale burning of biomass. The main activities covered are CO_2 emissions emitted by the power sector (i.e., power and heat genertion plants), by other industrial combustion (i.e., combustion for industrial manufacturing and fuel production) and by buildings and other activities such as industrial process emissions, agricultural soils and waste. Transport activities covered within EDGAR include road transport, non-road transport, domestic aviation, and inland waterways on a country level, as well as international aviation and shipping.[1]

For the world, regions and countries, the CO_2 emission data (provided by EDGAR) span through 2019. In a few places in the report, CO_2 data for 2020 are shown to illustrate the impact of the COVID-19 pandemic; however, these data are based on a different methodology than the EDGAR dataset and should not be compared directly with the data from previous years.

The latest CO_2 emission data for individual transport modes are for 2018 and have been compiled only at the global level. For passenger and freight transport, the data on global CO_2 emissions are for 2017, as this is the latest year with robust data. Data on passenger activity (passenger-kilometres) and freight activity (tonne-kilometres) – provided mainly in the country fact sheets – are based on the latest available year, as indicated in the report analysis.

Information on greenhouse gas emissions – provided in CO_2 equivalent (CO_{2eq}) – include not only CO_2 but also methane, nitrous oxide, and industrial gases such as hydrofluorocarbons, perfluorocarbons, sulphur hexafluoride and nitrogen trifluoride.[2] These data are less up-to-date. As of 31 May 2021, data on greenhouse gas emissions were not readily available for the period 2019-2020. In some cases, additional data sources were used to provide detailed information about other climate pollutants besides CO_2.

All data on CO_2 and other greenhouse gas emissions, as well as CO_{2eq}, are provided in metric tonnes.

Data on car ownership

Information on car ownership rates is based on a global dataset from the International Organization of Motor Vehicle Manufacturers (OICA), with the latest release (as of 31 May 2021) dating from 2015.[3] Although newer information is available for some individual countries, using these data would hinder accurate global comparisons. Data on passenger and commercial vehicle sales were available only up to 2019.

Policy landscape data

The policy-related information presented in this report is not intended to be comprehensive. The data for the policy landscape indicators provided in Section 3 were gathered through desk research unless otherwise indicated. Barriers to accessing such information include language and limited availability of information through online media (e.g., websites, press releases and news articles).

Data in country fact sheets

Information in the fact sheets is based on desk research and on contributions from the national focal points. The data were collected to the best of the authors' knowledge and based on data availability, and thus may not be complete or show the most recent status. When no information was available for a given indicator, the term "Not available" is used.

Data gaps

Major data gaps exist in areas where there is no globally accepted data collection methodology. For example, the mapping of cycling and walking infrastructure is not currently done in all regions. Also, the modal share can be surveyed through different methods, leading to inconsistencies in available data. In addition, data on paratransit (informal transport), a predominant form of transport in many parts of the world, are largely lacking. This results in an incomplete picture of the impact of transport on climate change and sustainable development.

Methodological approach

Countries and regions

The report follows the M49 Standard of the United Nations Statistics Division.[4] In total, 196 countries have official United Nations membership and are also party to the United Nations Framework Convention on Climate Change. The available data have been put in a common structure for the United Nations member countries, regions and income groups to enable a consistent assessment. Income groups are based on the World Bank's classification of 2019.[5]

Economic calculations

The per capita and gross domestic product (GDP) calculations are based on the United Nations World Population Prospects 2019 and on World Bank GDP data using constant 2010 USD.[6]

Spatial and temporal scales

The geographic scale (global, national, city-level, etc.) as well as time scale (annual, monthly, daily) used in this report depends largely on the available dataset, as noted in the relevant figures and text. The detailed data forming the basis of the calculations and analysis are provided in the SLOCAT Transport Knowledge Base.[7]

Criteria for selection

The report covers policies, targets, emission reductions (achieved or envisioned) and market measures. To merit inclusion in the analysis, the policies, projects and trends must have been announced or completed between 2018 and 2020. Significant developments from January through May 2021 were included when deemed relevant, with the understanding that the next edition of the *Transport and Climate Change Global Status Report* will cover a period starting in 2021.

Pre- and post-COVID-19 pandemic trends

The year 2020 was pivotal for the world, and the COVID-19 pandemic has had substantial impacts on many of the transport trends monitored in this report. This edition attempts to differentiate between long-term trends and impacts due to the pandemic. To the extent possible, the analysis notes "pre-pandemic" (up to the end of 2019 or latest by February 2020) and "during pandemic" trends (starting in March 2020 until the end of 2020), as in some cases the pandemic led to reversals in long-term trends, at least for a specific period of time. In each section, a box describes the impacts that the pandemic has had on specific regions and sub-sectors.

Assembling the report

Global Strategy Team

This edition of the report was guided by a global strategy team consisting of 20 experts in the field who provided inputs over the span of six meetings between September 2019 and October 2020. Additionally, small group consultations were organised in February 2021, following the peer review process.

Authors and contributors

The report was collaboratively drafted by 22 authors and contributors from 16 organisations, led by the SLOCAT Secretariat. This includes additions and high-level inputs from the copy editor and from the special advisor who also co-authored the Executive Summary. Authors researched and compiled relevant facts and figures for the five sections of the report, including the Focus Features, with supporting review and inputs from several other organisations.

Peer review: A peer review process was carried out from 18 December 2020 to 20 January 2021 with 1,700 comments received from 74 reviewers. Each comment was individually reviewed by the SLOCAT Secretariat and considered in finalising the report.

National focal points: The report benefited from the contributions of voluntary national focal points, or experts from various regions and countries who have been essential to overcome language and information barriers. A public call for participation to provide information on policies and data resulted in several hundred initial registrations. Out of these registrations, 78 national focal points provided inputs through a first survey from 24 January to 3 February 2020; and through a second survey (focused on the country fact sheets) from 6 to 30 August 2020. All national focal points that contributed to the surveys are listed in the Acknowledgements.

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