



MOBILITY AND TRANSPORT

Transport in the European Union

Current Trends and Issues

June 2024



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Contact: Rolf Diemer, Romain Chabert

*E-mail: MOVE-A3-SECRETARIAT@ec.europa.eu
rolf.diemer@ec.europa.eu
romain.chabert@ec.europa.eu*

*European Commission
B-1049 Brussels*

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Foreword

Much has happened over the last five years, since the previous edition of this report. We drew upon resilience and innovation to navigate a series of challenges. We did so successfully and without slowing our work on modernising and improving how we transport people and goods in the European Union.

We now have passed major milestones on our journey towards a more sustainable transport system, all while ensuring safety, efficiency, and resilience.

We have presented numerous legislative proposals on a wide range of transport and mobility issues, guided by the desire to increase the competitiveness of the EU economy. With over 30% of the Sustainable and Smart Mobility Strategy initiatives now either completed or ongoing and investment exceeding EUR 37 billion committed to more than 1 500 projects, our collective efforts are reshaping the transport landscape. The investment has not only improved infrastructure and connectivity, but also catalysed innovation and supported job creation across the continent.

The COVID-19 pandemic challenged us, but we kept transport moving. We were tested again by Russia's unjustified invasion of Ukraine, but once again, we responded decisively: since May 2022, Ukraine has exported around 126 Mt of goods and imported around 47 Mt through the EU-Ukraine Solidarity Lanes.

We are honoured to introduce this report – an overview of the state of play of the transport sector across the European Union. We trust that recent developments, across all sectors, will inspire further action on the journey towards more sustainable, smarter, more efficient and resilient transport.

Transport is part of what makes the EU what it is today. It connects people, regions, and markets across the European Union, while ensuring balanced regional development.

We have much to be proud of. But as this report illustrates, we must speed up the transition to a green and digital economy, while protecting our workers, and our industrial competitiveness.

These challenges also present an opportunity: a more prosperous and sustainable future, in which cleaner transport alternatives are more affordable, accessible, and resilient for EU citizens. To create this future, the Commission is driving and supporting the changes that all transport modes must make. These changes will ensure that the EU is a frontrunner in the shift towards a greener, more efficient transport system.

Transport infrastructure – the bricks and mortar – of steel and fibre-optic cables – that keeps transport moving – to step up connectivity, to protect this connectivity from climate change, and to create stronger links with Ukraine and Moldova, we need major investment.

Transport is not immune to geopolitical developments. Far from it. Alongside stepping up resilience, we will continue to stand with Ukraine, where transport has a key role to play. Without a doubt, the EU-Ukraine Solidarity Lanes represent a lifeline for Ukraine. The EU-Ukraine Road Transport Agreement also supports Ukrainian imports and exports and improves the country's connection to the EU.

It is a pleasure to introduce this publication, which returns after a COVID-19-enforced break. We appreciate its invaluable insights into the state of transport in the EU, and the information that it provides on key trends, as well as future challenges and opportunities.



Adina Vălean

Commissioner
Transport



Magda Kopczyńska

Director-General
DG Mobility and Transport

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1. Introduction

Transport is a fundamental sector of and for the economy. **Transport services** encompass a complex network of around 1.3 million private and public companies in the EU, employing some 10.2 million people and providing goods and services to the citizens and businesses of the EU and its trading partners. Transport also ensures connectivity and mobility across Europe, making a significant contribution to free movement, cohesion and competitiveness within the internal market.

1.1. Transport in the EU today

An **efficient transport system**, ensuring connectivity and accessibility, is essential for exploiting the economic assets of all regions of the European Union, for supporting the internal market and growth, and for promoting economic, territorial and social cohesion. It also influences trade competitiveness, as the availability, price and quality of transport services have strong implications for the production processes, the choice of trading partners and the functioning of supply chains.

EU **transport policy** shows important achievements for the benefit of people and businesses in the EU. By facilitating cross-border transport services and enhancing market access within the internal market, mobility has improved the wellbeing of people in the EU, striving to provide affordable, accessible, reliable, and secure transport networks without unnecessary administrative burden.

European funding, notably through the Connecting Europe Facility, the Cohesion policy, InvestEU and the Recovery and Resilience Facility is crucial to improve **transport infrastructure**, complete the Trans-European Transport Network and develop interoperable infrastructure, meeting the needs of low-emission and smart mobility.

Engagement in transport-related **research** at EU level and pilot activities are accelerating the shift to sustainable mobility and to innovative and digitally based solutions to maximise efficiency, interconnectivity, scalability, and adaptability.

Remaining challenges for the transport sector in the EU include removing barriers to a well-functioning **Single European Transport Area**, connecting Europe with modern, smart, multi-modal, and safe transport infrastructure networks, and shifting towards sustainable mobility.

The transport sector is facing increasing pressure as a result of **global challenges** such as climate change, and disruptive global crises, which in turn calls for the uptake of new technologies and mobility solutions.

From a **social perspective**, affordability, reliability, and accessibility of transport services are crucial, regardless of individuals' income levels and locations. Addressing these challenges will help pursue sustainable growth in the EU.

In order to address those challenges, the European Commission presented its **Sustainable and Smart Mobility Strategy** together with an Action Plan of 82 initiatives end 2020¹. This strategy lays down the foundation for how the EU transport system can achieve its green and digital transformation and become more resilient to future crises. As outlined in the European Green Deal, the result will be a 90% cut in

¹ European Commission. Sustainable and Smart Mobility Strategy.

transport emissions by 2050 relative to 1990, delivered by a smart, competitive, safe, accessible, and affordable transport system.

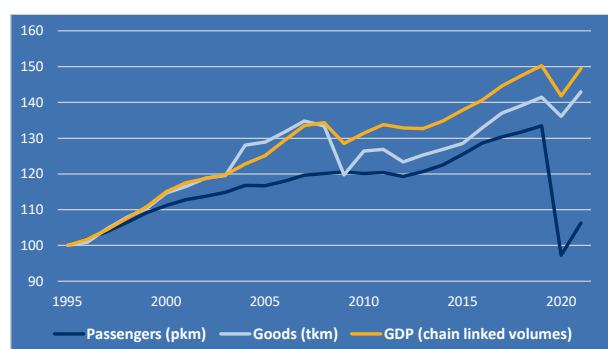
1.2. Overview and trends

In the EU, the **transport and storage** services sector (including postal and courier activities) accounted for more than 5% of total employment and almost 5% of gross value added².

The volume of transported goods in the EU, increased by about 41% between 1995 and 2019 (before the COVID-19 pandemic), while the volume of passenger transport increased by 33% over the same period.

Passenger transport was severely hit by the pandemic, dropping by 27% between 2019 and 2020. The activity recovered slowly by 2021 with an increase of 9% over the year, still 20% below 2019 levels. On the other hand, freight transport was more preserved. Even though the activity dropped by 4% in 2020, the sector rebounded quickly in 2021 (+5%) (Figure 1).

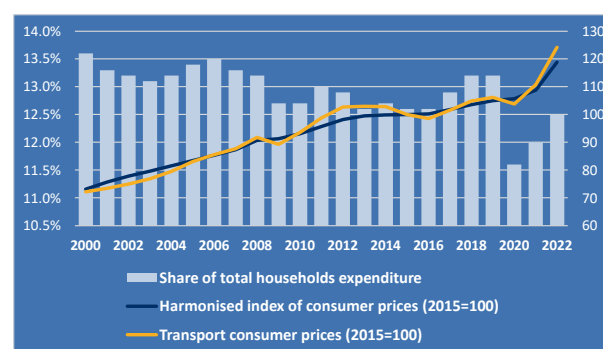
Figure 1: Transport activity in tonne-kilometres and passenger-kilometres in the EU (1995=100)



Source: European Commission. EU Transport in Figures. Statistical Pocketbook 2023.

The **consumer prices** for operation of personal transport equipment and for transport services have increased between 2015 and 2022 at a faster pace than overall consumer price inflation. The share of transport in final household expenditure on consumption varied over the years, fluctuating around 11.5–13.5% since 2000. (Figure 2). In 2022, transport was the third largest category of expenditure for households, following housing and related charges (24.1%) and food and non-alcoholic beverages (13.6%)³.

Figure 2: Evolution of consumer prices and household expenditure on transport in the EU



Source: Eurostat. HICP – annual data (average index and rate of change). Final consumption expenditure of households by consumption purpose.

For high value-added products and services produced in Europe, transport costs may not be a very significant proportion of total costs. However, the reliability of **logistics** is critical to the functioning of increasingly complex value chains. According to the World Bank's Logistics Performance Index for 2023⁴, 7 out of the 12 best performing countries in the world were EU countries. Yet, several EU countries show a relatively low logistics performance in global comparison (Figure 37).

The European transport sector faces **significant labour shortages**. The vacancy rate (measure of unmet demand for labour)

² European Commission. EU Transport in Figures. Statistical Pocketbook 2023.

³ Eurostat. Final consumption expenditure of households by consumption purpose.

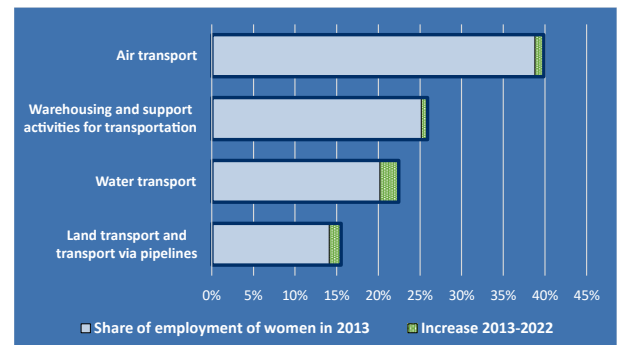
⁴ World Bank. The Logistics Performance Index and Its Indicators (2023).

increased over time in the transport and storage sector and was measured at 2.7% in 2022. According to the Employment and Social Developments in Europe report 2023⁵, 'Land transport and transport via pipelines' was one of the sub-sectors with the most persistent labour shortages. 'Heavy truck and lorry drivers' has been one of the road occupation categories with the most prevalent shortages mentioned over the last few years – as well as experiencing an increasing trend

The International Road Transport Union (IRU) estimated 233,000 unfilled truck driver positions in 2023 in Europe. For passenger transport, the estimation was 105,000 unfilled positions, representing 10% of the total professional driver population, an increase of 54% since 2022⁶. Working conditions, changing demographics, including urbanisation and ageing population, are factors contributing to shortages in the transport labour market. Additionally, the shift towards a more sustainable, digital, and automated transport sector is leading to job displacement, necessitating new skills such as big data analysis, artificial intelligence, and robotics.

The share of women employed in the transport sector is low, even though progress has been made in all transport sectors over the last 10 years (Figure 3). According to Eurostat, women represented around 20% of the labour force in the transport sector in 2022.

Figure 3: Share of woman employment in each transport sector in 2022

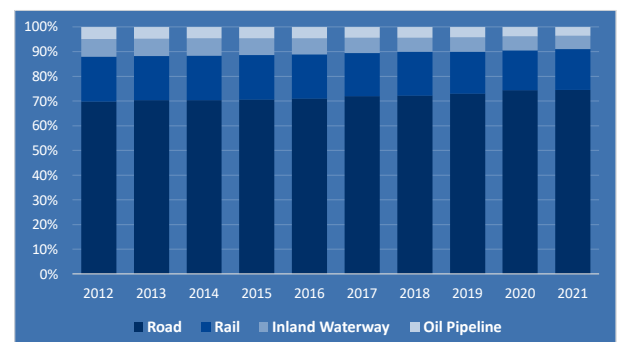


Source: Eurostat. Employment by sex, age, and detailed economic activity

For the **external trade of the EU in 2022**, the predominant mode was maritime transport, with 74% of the volume of imports and exports in tonnes (46% of the value), followed by road transport (8.6% of volume, 19.2% of value) and air transport (0.8% of volume, 20.7% of value)⁷.

The **modal split** of inland transport within the EU has not drastically changed since 2012, either for freight (Figure 4) or passenger transport (Figure 5).

Figure 4: Modal split of inland freight transport in the EU (% based on tonnes-km)



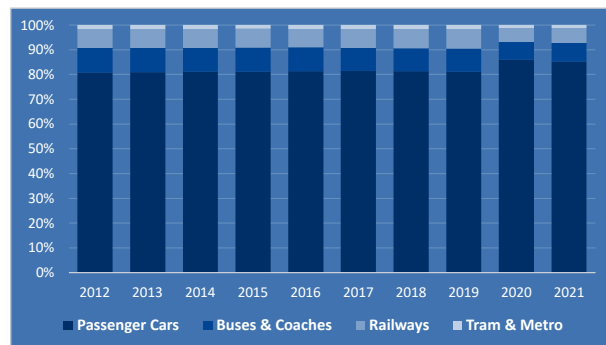
Source: European Commission. EU Transport in Figures. Statistical Pocketbook 2023

⁵ European Commission. Employment and Social Developments in Europe (ESDE) - Addressing labour shortages and skills gap in the EU (2023).

⁶ International Road Transport Union. Global driver shortages: 2023 year in review.

⁷ Eurostat. Extra-EU trade since 2000 by mode of transport, by HS2-4-6.

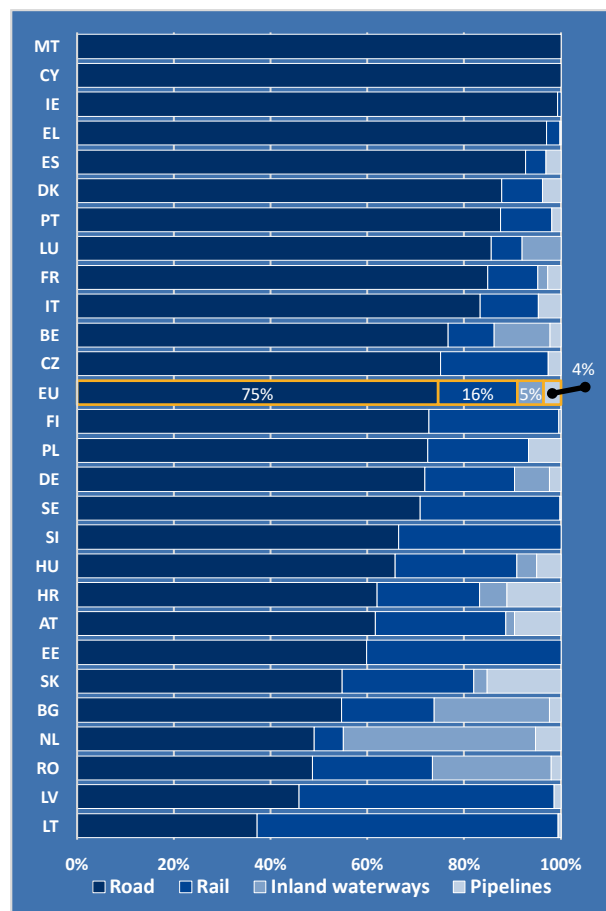
Figure 5: Modal split of inland passenger transport in the EU (% based on passenger-km)



Source: European Commission, EU Transport 1 Figures, Statistical Pocketbook 2023

For inland freight transport in the EU in 2021, road was predominant with 75% share of the total, followed by rail (16%) and inland waterways (5%), based on activity expressed in tonne-kilometres (Figure 6).

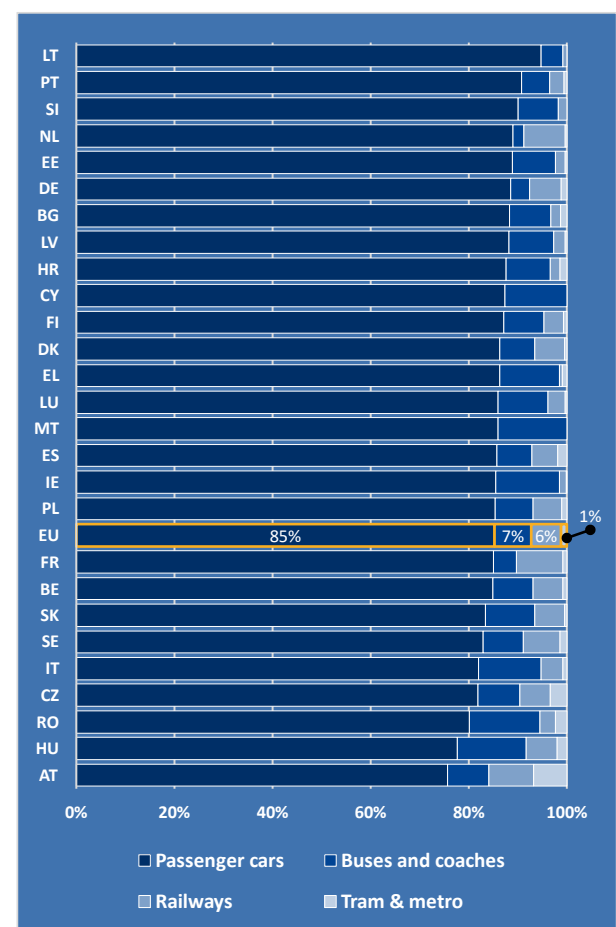
Figure 6: Modal split of inland freight transport in the EU (% based on tonnes-km, 2021)



Source: European Commission, EU Transport 1 Figures, Statistical Pocketbook 2023

For inland passenger transport (Figure 7), cars maintain their dominance, accounting for 85% of the share in 2021, a substantial lead over buses and coaches (7%) and railways (6%). The share of passenger cars in the modal split was 87.2% in 2020, highlighting the significant impact of the COVID-19 crisis on overall transport usage, particularly a decline in the use of public transport.

Figure 7: Modal split of inland passenger transport in the EU (% based on passenger-km, 2021)



Source: European Commission, EU Transport 1 Figures, Statistical Pocketbook 2023

2. Sustainable mobility

The Sustainable and Smart Mobility Strategy calls for a 90% reduction in greenhouse gas emissions from transport compared to 1990, in order for the EU to become a **climate-neutral economy by 2050**, while also working towards a zero-pollution ambition. To achieve this systemic change, there is a need to make all transport modes more sustainable, propose sustainable alternatives that are widely available in a multimodal, efficient and competitive transport system, as well as set the right incentives to drive the transition.

This implies that all policy levers must be pulled, including:

- (1) measures to significantly **reduce the current dependence on fossil fuels**, by replacing existing fleets with low- and zero-emission alternatives and boosting the use of renewable and low-carbon fuels, including for aviation and maritime.
- (2) decisive action to **increase the number of passengers travelling by rail and commuting by public transport** and active modes, as well as increasing substantially the volume of freight transported by rail, inland waterways, and short sea shipping.
- (3) **internalisation of external costs**, by implementing the 'polluter pays' and 'user pays' principles, in particular through carbon pricing and infrastructure charging mechanisms.

The **'Fit for 55' package** was tabled in July 2021 to respond to the requirements of the EU Climate Law to reduce Europe's net

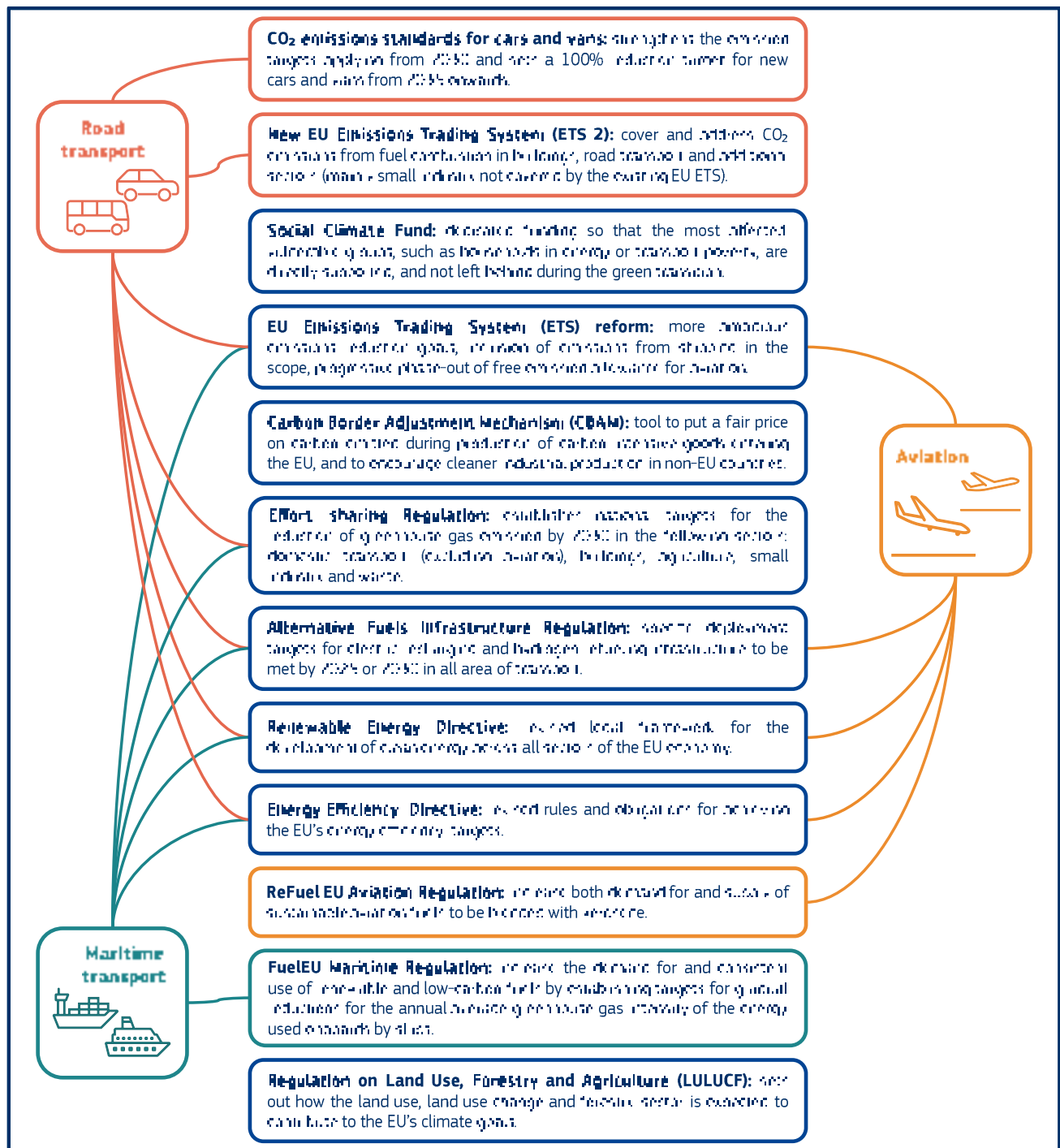
greenhouse gas emissions by at least 55% by 2030 and aim for EU-economy wide carbon neutrality by 2050. It was complemented when the European Commission proposed increased ambition on renewable energy and energy efficiency in the REPowerEU plan to respond to Russia's war of aggression against Ukraine and boost Europe's energy security. The final legislative package is expected to reduce EU net greenhouse gas emissions by 57% by 2030.

While this legislative package is a central part of the European Green Deal, work continues on other pending legislative files and proposals, and on the implementation of legislation in Member States. The revision of the Energy Taxation Directive, an integral part of the Fit for 55 Package, remains to be completed, and the European Commission urges Member States to conclude negotiations as soon as possible⁸. All the other proposals of the Package have now been adopted.

The overall package includes emissions reduction targets across a broad range of sectors, and an updated emissions trading system to cap emissions, put a price on pollution and generate investments in the green transition, and social support for citizens and small businesses. To ensure a level playing field for European companies, the Carbon Border Adjustment Mechanism (CBAM) ensures that imported goods be subject to an equivalent carbon price on targeted sectors. The European Union now has updated targets on renewable energy and energy efficiency, and will phase out new polluting vehicles by 2035, while boosting charging infrastructure and the use of alternative fuels in road transport, shipping and aviation (Figure 8).

⁸ European Commission. Press release. Commission welcomes completion of key 'Fit for 55' legislation, putting EU on track to exceed 2030 targets (Brussels, 9 October 2023).

Figure 8: Fit for 55 – Measures adopted by the co-legislators based on Commission proposals (October 2023)



Source: European Commission, DG MOVE. Supported by the factsheet "The European Green Deal – Delivering the EU's 2030 Climate Targets" (October 2023).

Several policy initiatives complement the Fit for 55 package in the transition towards green mobility.

The revision of the Energy Performance of Buildings Directive (EPBD), adopted in April

2024⁹, is complementing the Alternative Fuels Infrastructure Regulation (AFIR) with requirements for recharging infrastructure in residential and non-residential buildings, in which a large share of recharging is expected to take place. This will boost the uptake of sustainable mobility thanks to provisions on pre-cabling, recharging points for electric vehicles and bicycle parking spaces.

In January 2024, an agreement was reached on the revision of the CO₂ emission standards for heavy-duty vehicles (HDVs). The agreement sets CO₂ emissions reduction targets for HDVs of 45% for 2030-2034, 65% for 2035-2039 and 90% for 2040, compared to 2019 levels. The scope of the Regulation is expanded, and these standards will now apply to almost all trucks (including vocational vehicles, such as garbage lorries, tippers or concrete mixers as of 2035), urban buses, long-distance buses and trailers. Specific emissions reduction targets are also set for trailers (7.5%) and semi-trailers (10%), starting from 2030¹⁰.

Finally, the Euro 7 standard, adopted in April 2024¹¹, introduces stricter limits for heavy-duty buses and lorries for various pollutants, including some that have not been regulated until now, such as nitrous oxide (N₂O). In addition, Euro 7 introduces stricter limits for particle emissions produced when braking, with specific limits for electric vehicles. The new rules also include stricter requirements for all vehicles in terms of both mileage and lifetime.

2.1. Transition towards sustainable transport

To achieve sustainable modes of transport, it is necessary to boost production and uptake of low and zero- emission vehicles, vessels, and aircraft, supported by renewable and low carbon fuels. There is a need to ensure that the sustainable vehicles and fuels are supplied by the industry, to put in place the necessary infrastructure, and to incentivise demand by end-users. It will also be necessary to continue supporting research and innovation on competitive and future-proof technologies, products, and services.

2.1.1. Renewables and low carbon fuels

Transport as a whole remains very dependent on oil: **oil-derived fuels** account for 92.7 % of energy consumption in transport in 2022 (including international navigation and aviation).

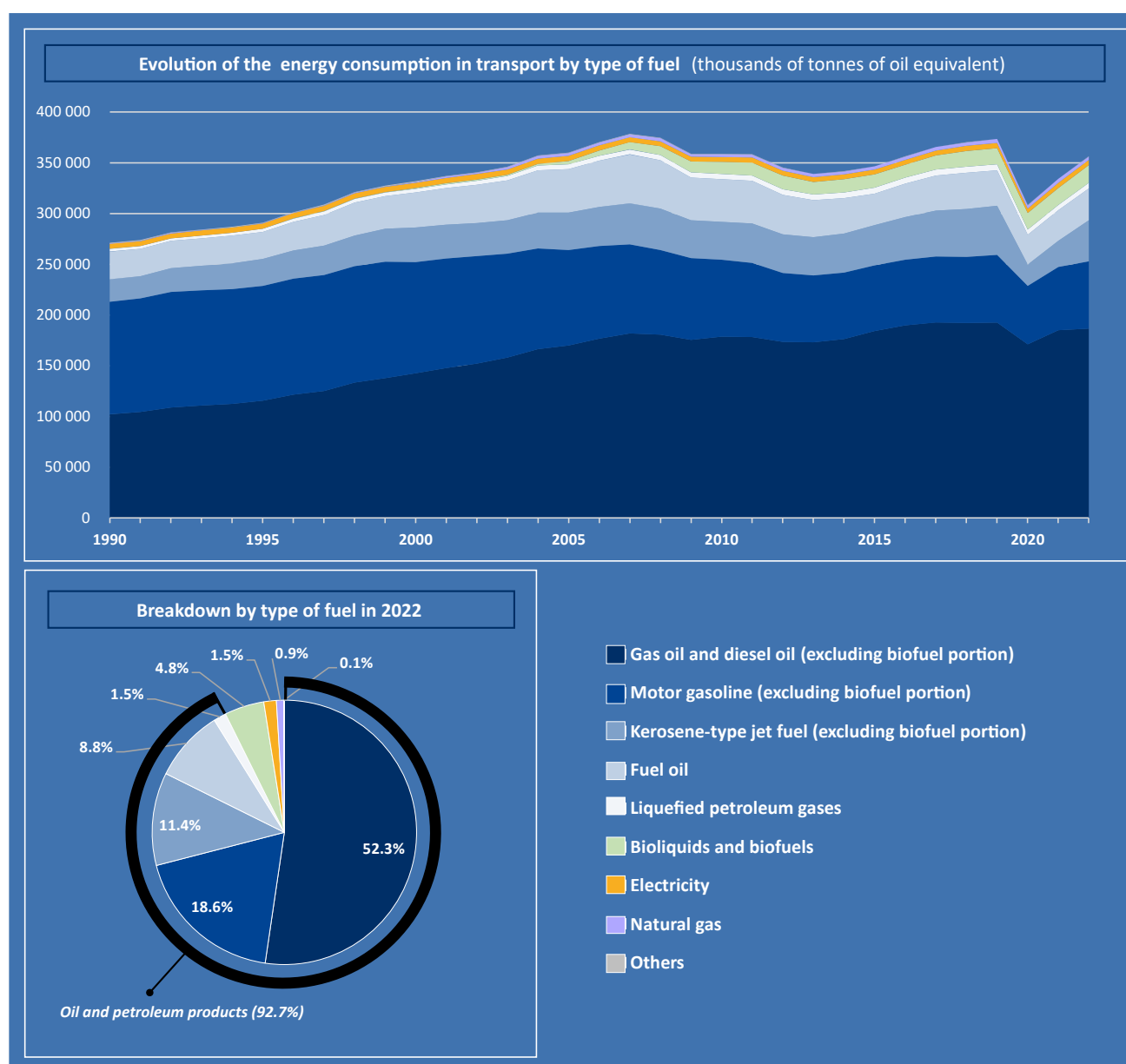
After peaking in 2007, transport oil consumption decreased continuously until 2013. This resulted from improvements in energy efficiency, impacts of the economic recession and the consequent decline in demand for transport and a period of high oil prices after 2010. Even though it increased in the following years, oil consumption did not reach 2007 levels, settling 9% below in 2022.

⁹ European Commission. Energy Performance of Buildings Directive adopted to bring down energy bills and reduce emissions (12 April 2024).

¹⁰ European Commission. Commission welcomes agreement on strong EU targets to reduce CO₂ emissions from new trucks and urban buses (18 January 2024).

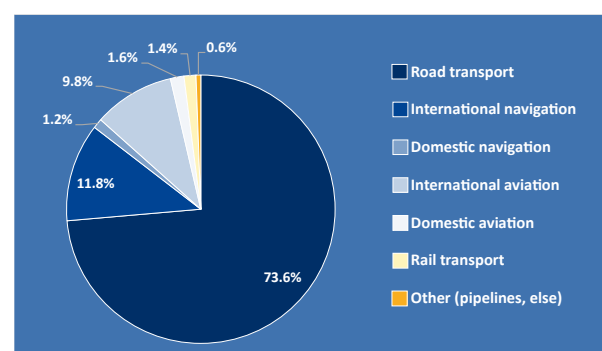
¹¹ Council of the European Union. Euro 7: Council adopts new rules on emission limits for cars, vans and trucks (12 April 2024).

Figure 9: Energy consumption in transport by type of fuel in the EU, evolution and breakdown



Road transport accounts for the largest share of the overall consumption, with 73.6 % of the total in the EU in 2022 (Figure 10).

Figure 10: Breakdown of the consumption of energy by transport modes (2022)



Source: Eurostat. Complete energy balances including international aviation and maritime transport. Share based on thousands of tonnes of oil equivalents.

The share of **energy from renewable sources**¹² used for transport in the EU increased from below 2% in 2005 to 9.6% in 2022¹³.

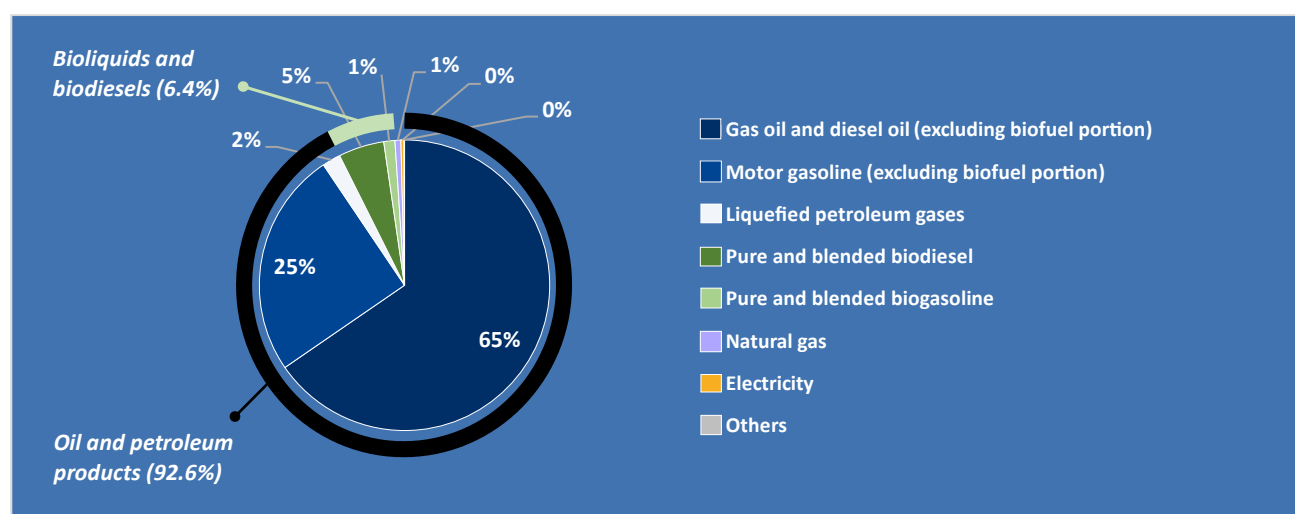
Progress among the EU Member States varies significantly, with the share of energy from

renewable sources used for transport ranging from 2.4% in Croatia up to 29.2% in Sweden.

i. Road transport

The distribution of fuel used in **road transport** follows the split of transport overall, with oil and petroleum products accounting for 92.6% of the energy consumption in the sector in 2022.

Figure 11: Energy consumption in road transport by type of fuel in the EU (2022)

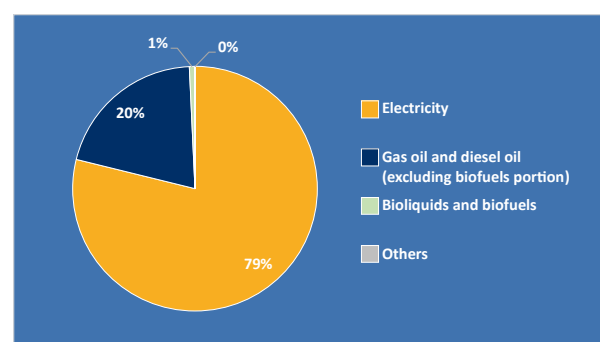


Source: Eurostat. Complete energy balances. Share based on thousands of tonnes of oil equivalents.

ii. Rail transport

The energy consumption in **rail transport** essentially comes from electricity, constituting 79% of the mix in 2022.

Figure 12: Energy consumption in rail transport by type of fuel in the EU (2022)



Source: Eurostat. Complete energy balances. Share based on thousands of tonnes of oil equivalents.

On average, 56% of the rail lines are electrified in the EU (113 722 out of 202 596

¹² Directive 2018/2001/EU (RED II). To be replaced by Directive (EU) 2023/2413 (RED III) in 2025.

¹³ Eurostat. Share of renewables in transport increased slightly in 2022.

km)¹⁴. Yet, the electrified network is more intensively used in 2022: about 80 % of train activity (measured in train-km) in the reporting countries was performed on electrified rail lines¹⁵.

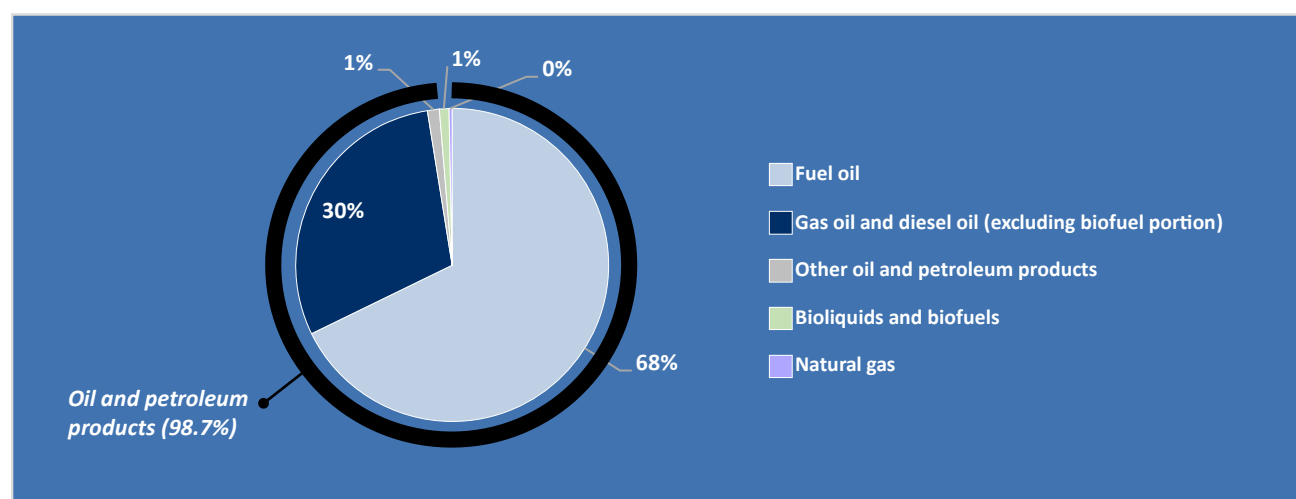
On non-electrified railways, diesel is the used fuel. As alternatives for diesel locomotives, where electrification would be deemed too costly, there are several options being developed and/or in demonstration projects. Those renewables or low-carbon fuel solutions already in use or being developed includes battery electric & hybrid for rail applications, hydrogen fuel cells for rail

applications, biodiesel as drop-in or replacement for diesel and LNG for rail applications¹⁶.

iii. Waterborne transport

For **waterborne transport** (including maritime transport and inland navigation), the uptake of renewables and low carbon fuel is currently very low, with conventional oil and petroleum products constituting the overwhelming majority of the fuel used in the sector (98.7%).

Figure 13: Energy consumption in waterborne transport by type of fuel in the EU (2022)



Source: Eurostat. Complete energy balances. Share based on thousands of tonnes of oil equivalents. Waterborne transport includes domestic navigation and international maritime bunkers in the EU. Energy consumption for inland waterways is only available together with maritime energy consumption in the energy balances.

The need to decarbonize the sector has led to an increased focus on renewable and low-carbon fuels (advanced biofuels, including biomethane, and renewable and low-carbon synthetic fuels and electricity, including shore-side electricity), zero-emission technologies (e.g., battery electric, wind-assisted

propulsion, and fuel cell) and other energy-efficient technologies¹⁷. This is reflected in the order books. Close to 50% of the ships ordered are designed to be capable of operating with alternative fuels.

¹⁴ European Commission. EU Transport in Figures. Statistical pocketbook (2023).

¹⁵ IRG-rail. 12th Annual Market Monitoring Document (March 2024). No data available on this indicator for Czechia, Denmark, the Netherlands, Slovakia and Slovenia.

¹⁶ European Alternative Fuels Observatory.

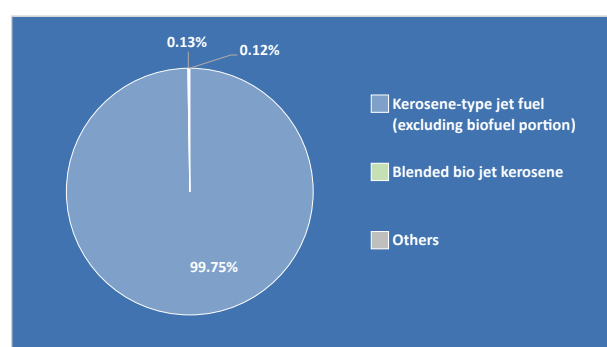
¹⁷ European Maritime Safety Agency. Sustainable shipping.

iv. Aviation

Aviation is currently almost exclusively fuelled by kerosene-type jet fuels (99.75% in 2022), even though the share of bioliquids and biofuels started to increase (Figure 14).

According to the European Alternative Fuels Observatory and the ITF-OECD report on E-fuels¹⁸, several alternatives are studied to tackle the need for aviation to improve in terms of use of renewables and low fuels, notably through E-fuels, bio-jet fuels and LNG.

Figure 14: Energy consumption in aviation by type of fuel in the EU (2022)



Source: Eurostat. Composite energy balances. Share based on thousands of tonnes of oil equivalents. Domestic aviation and international bunkers for aviation are included.

2.1.2. Low and zero-emissions vehicles, vessels and aircrafts

The green transition also relies on technological evolutions needed to decarbonize the sector.

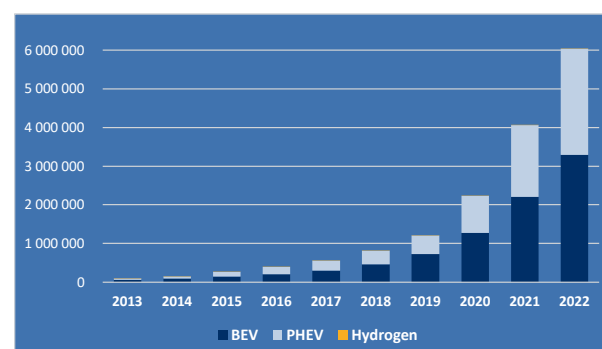
i. Road transport

The efficiency of the passenger car segment has been improving over time¹⁹.

The uptake of **zero and low emissions passenger car (M1) and vans (N1)** in the EU has accelerated, with an overall increase of 2 million vehicles in 2022, compared to 1.8 million in 2021 and 1 million in 2020. Thus, the fleet of electric cars and vans in the EU has crossed the 6 million threshold.

Yet, the overall zero and low emission uptake in the EU for passenger cars and vans still stands at 2% only, with large disparities between countries (Figure 16). Those disparities are further underlined when it comes to new registrations (Figure 17), ranging in 2022 between 54% (Sweden) to 4.4% (Croatia).

Figure 15: Uptake of zero and low emissions passenger cars (M1) and vans (N1) in the EU

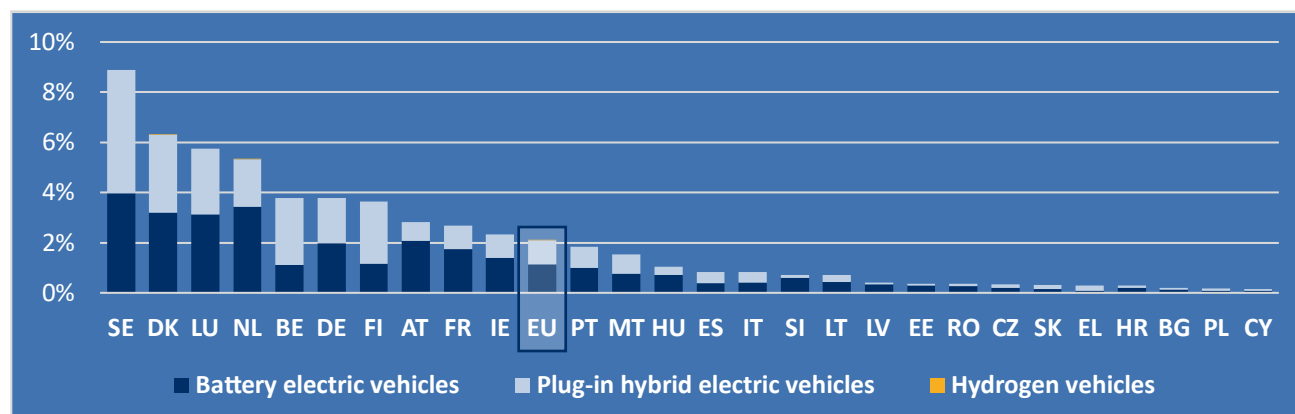


Source: European Alternative Fuels Observatory

¹⁸ ITF - OECD. The Potential of E-fuels to Decarbonise Ships and Aircraft.

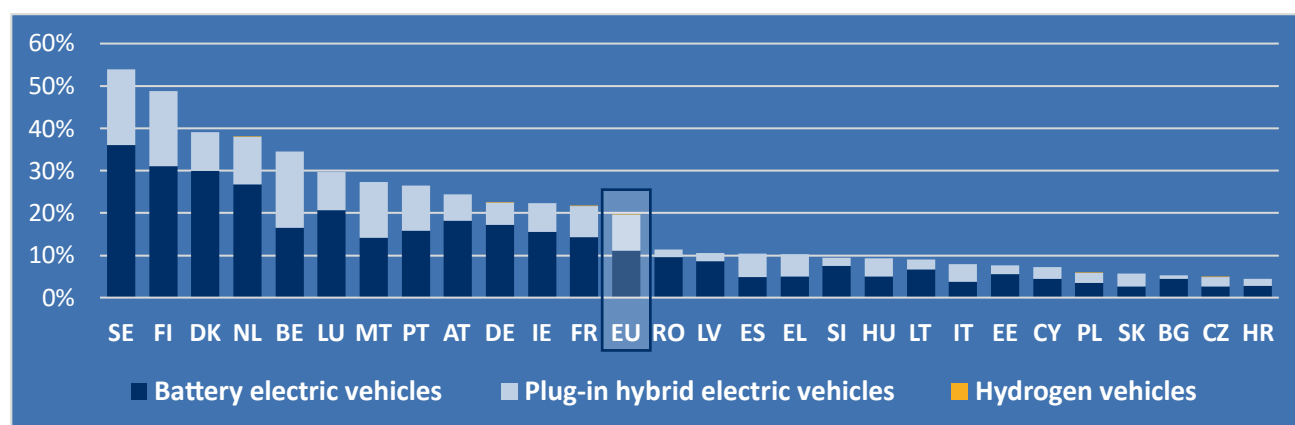
¹⁹ European Environment Agency. Monitoring of CO₂ emissions from passenger cars, 2022 – Final data.

Figure 16: Zero and low emissions passenger cars (M1) and vans (N1) in overall fleet (%; 2022)



Source: European Alternative Fuels Observatory

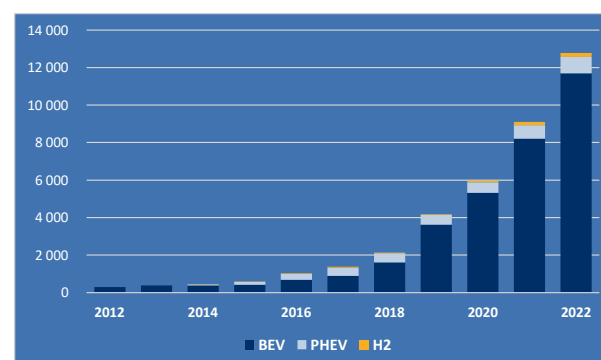
Figure 17: Zero and low emissions passenger cars (M1) and vans (N1) in total registration (%; 2022)



Source: European Alternative Fuels Observatory

There is a similar evolution for the registration of new zero and low emissions buses and (M2 & M3, Figure 18), accounting for 8.8% of new registrations in 2022²⁰.

Figure 18: Uptake of zero and low-emissions buses (M2 & M3) in the EU

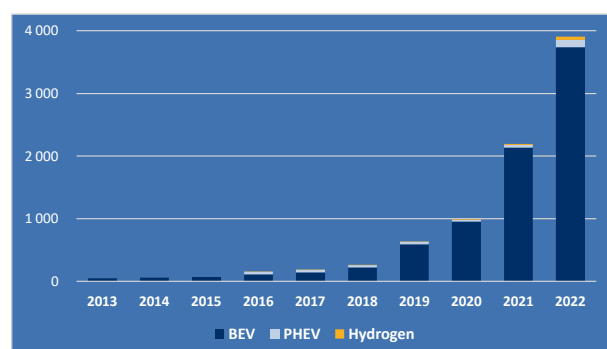


Source: European Alternative Fuels Observatory

²⁰ European Commission. EU Transport in Figures. Statistical Pocketbook 2023.

Finally, the **uptake of low-emission lorries (N2 & N3) in the EU** follows the same pattern, with 1603 new zero and low-emission lorries reaching the market in 2022, up from 1181 in 2021 and 361 in 2019.

Figure 19: Uptake of zero and low emissions lorries (N2 & N3) in the EU

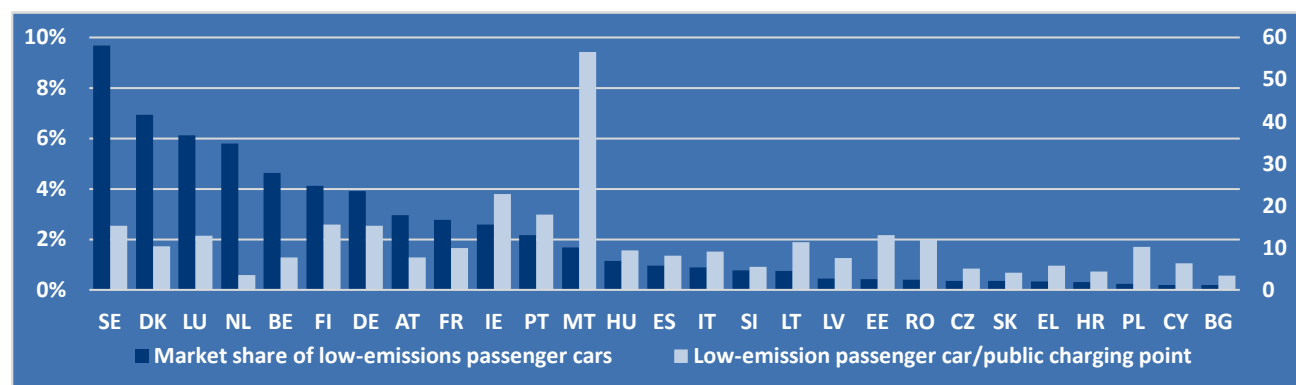


Source: European Alternative Fuels Observatory

This increase of zero and low emissions vehicles has to be met with a progress in the infrastructure supporting the uptake, especially in terms of recharging points.

While the average in the EU was 10 vehicles per charging station (end 2022), this distribution is fragmented among Member States (Figure 20).

Figure 20: Zero and low-emission cars market share and number per public charging point (2022)



Source: European Alternative Fuels Observatory. Own calculations

The new **Regulation for the deployment of alternative fuels infrastructure (AFIR)** sets mandatory deployment targets for electric recharging and hydrogen refuelling infrastructure. By making a minimum of recharging and refuelling infrastructure available across the EU, the regulation will end consumer concerns about the difficulty to recharge or refuel a vehicle. AFIR also paves the way for a user-friendly recharging and refuelling experience, with full price transparency, common minimum payment

options and coherent customer information across the EU.

On the world scale, electric car deployment has been growing rapidly, with the global stock of electric passenger cars reaching 26.2 million in 2022²¹, (+59% from 2021). Around 53% of electric cars on the road in 2022 were in China (13.8 million) compared to 47% in 2021. In comparison, Europe accounted for 30% of the global fleet, and the United States 11%.

²¹ International Energy Agency. Global electric car stock.

ii. Waterborne transport

Several alternative technologies are studied to increase the sustainability of the maritime transport sector, whether onboard or onshore²². Hydrogen and hydrogen-based fuels produced from renewables will become increasingly important in the decarbonization of shipping.

Batteries can be used either in all-electric ship concepts (batteries used to provide full energy supply for ships at berth and at sea) or a hybrid ship (batteries used to enable zero-emission operation for part of the operation or, simply, to allow improved energy efficiency).

The current low energy density of the available electrical energy storage systems makes them a preferred option for short-distance voyages or services that require low autonomy. For this reason, the ship record statistics shows that the largest number of installations are in car/passenger ferries and ships dedicated to other activities than deep-sea commercial cargo transport²³ (Figure 22).

According to the Alternative Fuels Insight, there were more than 800 battery ships in operation globally in 2023, a figure that has more than tripled in the past five years. Out of those, around 60% are operating in Europe using batteries on board for propulsion, with at least 50% hybrid or plug-in hybrid and around 13% pure electric.

Future trends for marine battery system applications will include the use of these systems to cover zero-emission operation at berth, to meet FuelEU requirements.

Fuel cells for onboard power production represent a technological solution which, despite lower power density, can contribute to improve the environmental performance of ships at sea and at berth, competing with, or complementing, batteries as zero-emission technology. When using hydrogen as primary fuel (low-temperature fuel cells) no NO_x or direct CO₂ are emitted. Also, when powered by low carbon fuels, such as methane or methanol, (high-temperature fuel cells) direct emissions of CO₂ represent the single emission stream from fuel cells. If combined with onboard carbon capture systems, high-temperature fuel cells can also work as zero-emission technologies²⁴.

Irrespective of the energy conversion technology used, the adoption of a Lifecycle/Well-to-Wake framework for assessment of GHG emissions from ships, counting emissions from production, distribution, and use of the fuels onboard, allows for a new definition of zero emission ships.

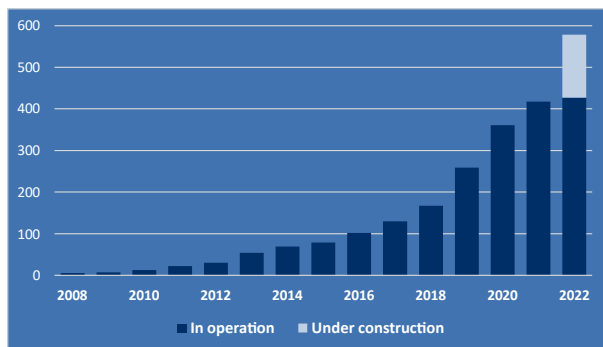
Improved **ship design and operation** can contribute to reducing GHG emissions. The International Maritime Organization introduced in 2011 a mandatory ship energy efficiency management plan (SEEMP) and an energy efficiency instrument for the design of new ships (Energy Efficiency design index – EEDI). In 2021, the IMO adopted an energy efficiency instrument for existing ships (EEXI) and an operational carbon intensity rating mechanism (CII).

²² European Maritime Safety Agency. Alternative technologies.

²³ European Maritime Safety Agency. EMSA Guidance on the Safety of Battery Energy Storage Systems on board ships.

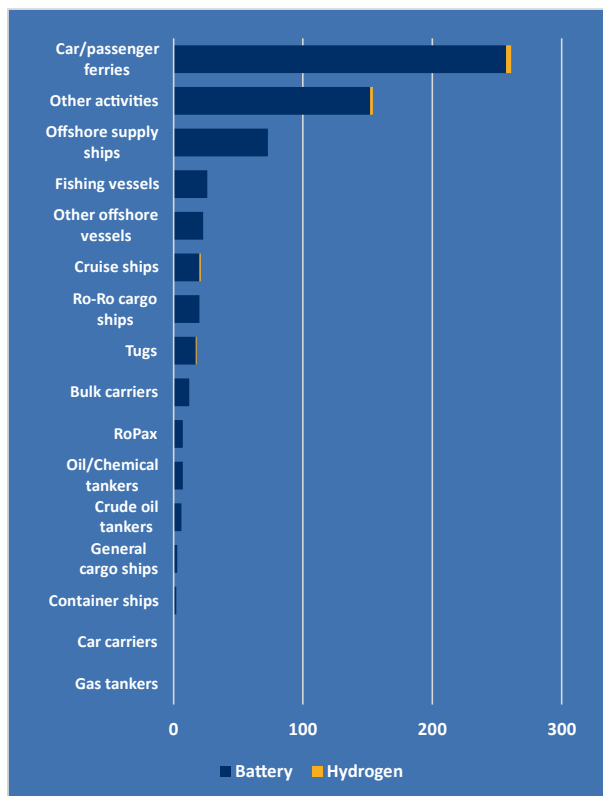
²⁴ European Maritime Safety Agency. Study on the use of fuel cells in shipping.

Figure 21: Development of the global fleet of ships with batteries on board for propulsion either in pure electric or hybrid functions in 2022



Source: European Alternative Fuels Observatory

Figure 22: Overview of zero or low emissions vessels in operation or on order in 2022



Source: European Alternative Fuels Observatory

iii. Aviation

For **aviation**, the two main alternatives developed to conventionally powered aircraft are electric aircraft and hydrogen aircraft²⁵,

with hybrid electric aircraft considered as a transition technology for short range and regional aviation.

An **electric aircraft** is an aircraft powered by electricity, usually via one or more electric motors which drive propellers. Electricity is supplied to and stored in on-board batteries. Most of electric aircraft models are only prototypes or demonstrations not available in commercial production.

Hybrid electric aircraft combine both electric and hydrocarbon fuel power sources as a necessary transitional phase for zero emission aviation in certain applications such as short range or regional flights.

A **hydrogen-powered aircraft** uses hydrogen fuel as a power source. Hydrogen can either be burned in a jet engine or another kind of internal combustion engine or can be used in a fuel cell to generate electricity to power an electric motor. Unlike most aircraft, which store fuel in the wings, hydrogen-powered aircraft are usually designed with the hydrogen fuel tanks inside the fuselage. Several projects are currently underway.

2.2. Alternatives for improved modal choices

Sustainable alternatives must be made widely available now in a fully integrated and seamless **multimodal mobility system**. The EU cannot rely exclusively on technological solutions. Immediate action to adapt the mobility system is necessary to tackle climate change and reduce pollution.

Multimodality takes advantage of the strengths of the different modes, such as convenience, speed, cost, reliability,

²⁵ European Alternative Fuels Observatory. Alternative fuelled aircrafts.

predictability, and can offer more efficient transport solutions for people and goods.

The COVID-19 pandemic has demonstrated how increased multimodality is also crucial to improving the resilience of the transport system and how ready the public is to embrace sustainable alternative modes of travel.

Regarding passenger transport, people are willing to switch to more sustainable modes of transport, in particular in their daily mobility, with the main condition for switching being the cost, availability and speed²⁶. The EU must help create appropriate conditions for the higher uptake of sustainable alternatives that are safe, competitive, and affordable. At the same time, mobility patterns and consumer behaviour are changing. These changes are being reinforced by the COVID-19 pandemic and are being largely facilitated by digital solutions. Teleworking, videoconferencing, electronic commerce, the uptake of shared and collaborative mobility services, all contribute to the ongoing transformation of mobility.

2.2.1. New urban mobility framework and mobility patterns

The EU works with cities and regions to develop a sustainable urban mobility policy, including efficient public transport systems and good connectivity. It also strives to improve the quality of life in cities by promoting active mobility solutions, such as walking and cycling.

The new EU Urban Mobility Framework²⁷ complements the proposal for revised guidelines for the Trans-European Transport Network which foresees that all major cities ('urban nodes') on that network must develop a sustainable urban mobility plan by 2025. The framework outlines a common list of measures and initiatives for these cities, as well as the remaining cities in the EU, to meet the challenge of making their mobility more sustainable.

The goals of the **Climate Neutral and Smart Cities Mission²⁸** are to achieve 100 climate neutral and smart cities by 2030 and to ensure that they also act as experimentation and innovation hubs to all European cities (Figure 23).

²⁶ Special Eurobarometer 495 showed that the majority of car users are ready to switch to more environmentally friendly forms of transport for their daily mobility. An alternative that is just as fast or a similar price would influence respondents towards a more environmentally friendly solution for long-distance travel.

²⁷ COM(2021) 811 final.

²⁸ European Commission. EU Missions. 100 climate-neutral and smart cities.

Figure 23: Selected EU cities participating in EU Mission “100 climate-neutral and smart cities”

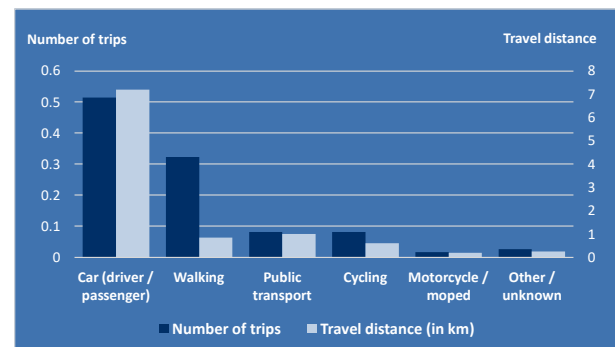


Source: European Commission EU missions, 100 climate-neutral and smart cities

When it comes to the analysis of the related mobility patterns, the European Commission carried an EU-wide **survey on New Mobility Patterns** covering all mobility modes, including active modes. The travel survey targeted individuals aged between 15 and 84 years old and was conducted from March to August 2021. The results gave relevant indicators on the different topics, such as the ownership and use of cars according to different parameters, or the purposes of daily trips²⁹.

Specifically, the study highlighted the reliance on cars in daily urban mobilities, both in terms of trips (1.04 trips per person per day on average) and of total distance (10.1 km per person per day on average) (Figure 24).

Figure 24: Number of trips and travel distance (in km) per person per day in urban areas (2022)



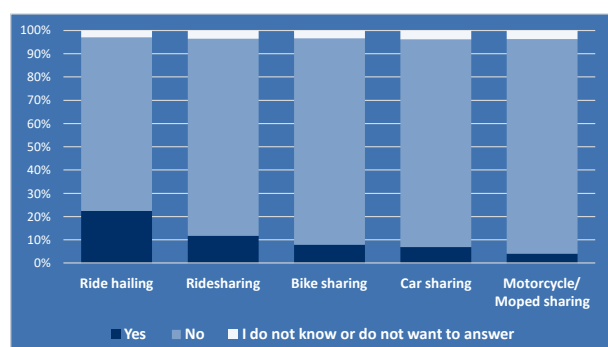
Source: European Commission Study on New Mobility Patterns in European Cities

When it comes to the uptake of new mobility services in the EU, the survey showed that the most used new mobility services were ride hailing³⁰ and ride sharing³¹ with 23% and 12% of the population using them, respectively (Figure 25). However, these services are not frequently used, with 70% and 60% of the population only using ride hailing and ride sharing less than once a month, respectively. Very few people use these two services on a daily basis - only 1% for ride hailing and 4% for ride sharing. Other shared services have a very low current uptake in the EU. The main reason to use these sharing services is to move around the city and its surroundings.

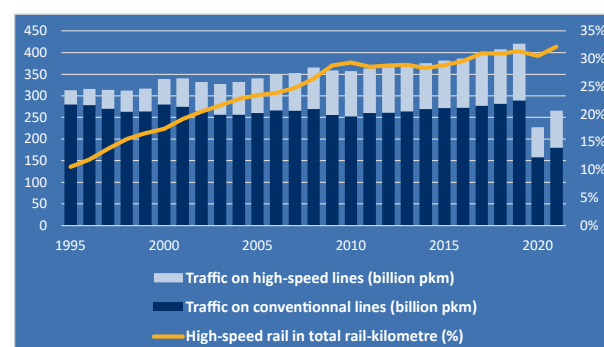
²⁹ European Commission. Study on New Mobility Patterns in European Cities.

³⁰ Service which allows the passenger to ask for a car and driver to come immediately and take you somewhere.

³¹ Arrangement through websites or mobile apps, in which a passenger travels in a private vehicle driven by its owner, heading in the same direction for a fee or for free.

Figure 25: Use of new mobility services in the EU (2022)

Source: European Commission Study on New Mobility Patterns in European Cities.

Figure 26: Passenger rail traffic in the EU (billion pkm)

Source: European Commission Statistical pocketbook 2023 EU Transport in Figures. Pkm: passenger-kilometre.

2.2.2. Passenger and freight rail transport

i. Passenger rail transport

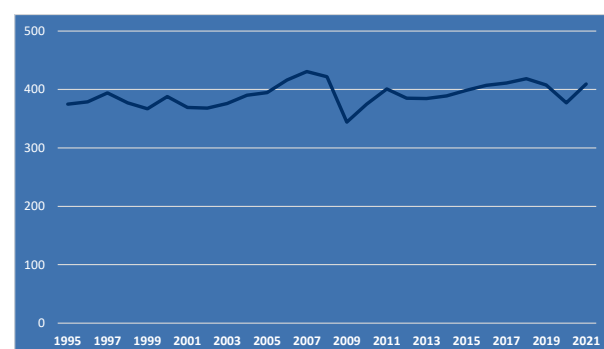
Overall, **passenger rail traffic** increased steadily over the past 30 years (+35% between 1995 and 2019, last year before the COVID-19 pandemic), with an average annual increase of 1.3% (Figure 26). By 2021, traffic had not recovered from the pandemic (63% of 2019 levels in 2021).

This increase is largely due to the rise of high-speed rail traffic³²: +301% between 1995 and 2019, with an average increase of 6% per year.

ii. Rail freight transport

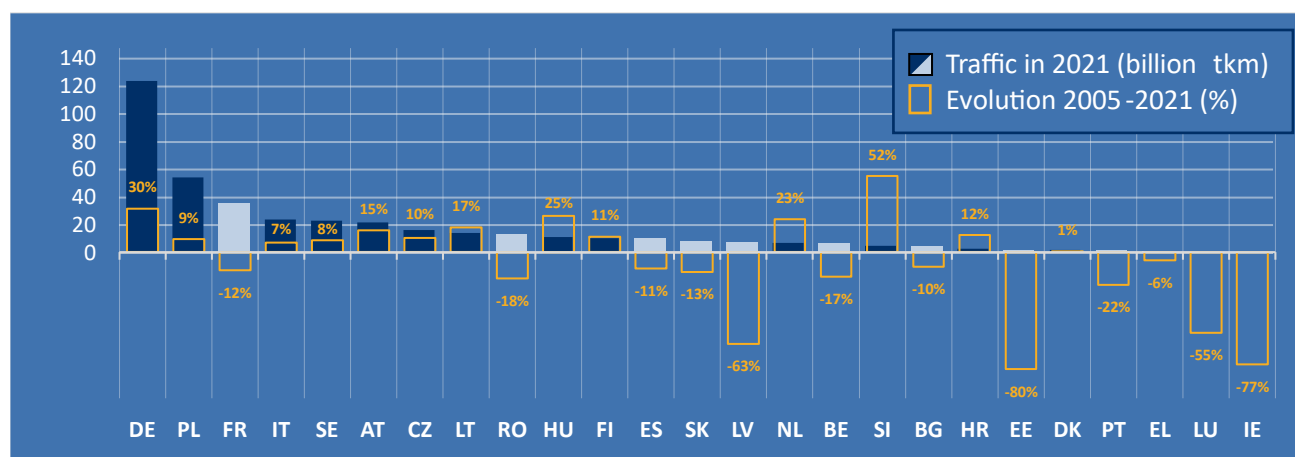
Similarly, the **rail freight traffic** did not change much in the EU over the past decades, even though evolution differed on a national level (Figure 28).

The overall contribution of rail in the freight transport might improve with an increased capacity and interoperability, strengthened cross-border coordination and cooperation between rail infrastructure managers, better overall management of the rail network, and the deployment of new technologies such as digital coupling and automation.

Figure 27: Rail freight traffic in the EU (billion tkm)

Source: European Commission EU Transport in Figures Statistical Pocketbook 2023.

³² High speed lines include principal railway lines allowing traffic at speeds on the main segments equal to or greater than 200 km/h on upgraded lines and 250 km/h on specially built lines. Dedicated high-speed railway line is a line specially built to allow traffic at speeds equal to or greater than 250 km/h for the main segments.

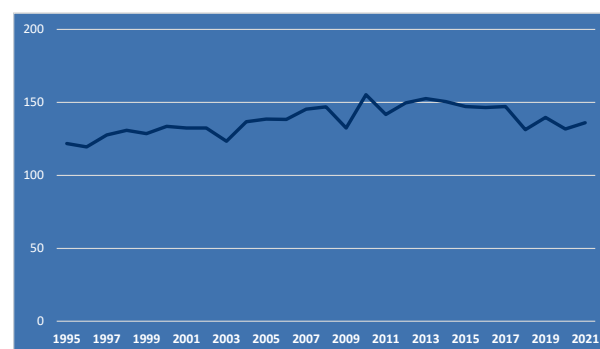
Figure 28: Rail freight traffic in 2021 and evolution 2005-2021


Source: European Commission EU Transport in Figures, Statistical Pocketbook 2023

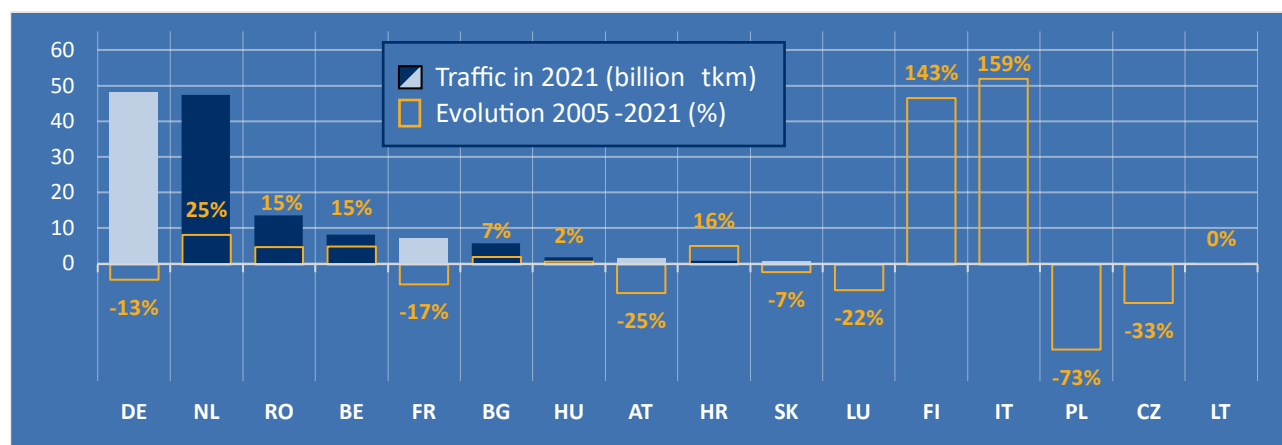
2.2.3. Inland waterways freight transport

Even though the use of **inland waterways** for freight transport increased between 1995 and 2010, this growth seems to have reached a ceiling, and even started to decline (Figure 29).

Yet this evolution hides also very different paths between countries (Figure 30). Only in a few countries is inland waterways' share really noticeable in total freight transport (Figure 6).

Figure 29: Inland waterways freight traffic in the EU (billion tkm)


Source: European Commission EU Transport in Figures, Statistical Pocketbook 2023

Figure 30: Inland waterways freight traffic in 2021 and evolution 2005-2021


Source: European Commission EU Transport in Figures, Statistical Pocketbook 2023

2.3. External costs of transport

Transport activities produce negative externalities to the environment and to society. In the context of pressing environment and climate challenges, the **external costs** are an important aspect to be considered by EU transport policy. Those externalities consist of accidents, air pollution, climate change, noise, congestion, well-to-tank emissions and habitat damage, with infrastructure costs adding up to those externalities. Externalities of transport sum up to almost EUR 900 billion annually, excluding all infrastructure costs³³.

Road transport causes more than 80% of them (approximately EUR 550 billion in passenger transport and EUR 170 billion for freight). These costs include accidents costs (almost EUR 250 billion), congestion costs (some EUR 230 billion) and environmental costs (almost EUR 250 billion).

Other modes cause smaller total costs than road:

- Maritime, almost EUR 90 billion (mostly air pollution)
- Aviation, almost EUR 40 billion (mostly climate change)
- Rail, less than EUR 20 billion (the biggest being noise)

- Inland waterways: around EUR 3 billion (mostly air pollution)

These are the results of a peer-reviewed study carried out for the Commission in 2019³⁴. The study seeks to quantify external costs as non-market items in monetary terms. While the study allows for important insights, it is in the nature of such research that no specific political conclusions can be drawn. The study also explicitly acknowledges that there are important areas for future research in this area.

The high modal share of road is clearly an important reason for the high costs associated to road transport, but road also shows the highest **average external costs across modes** (costs per passenger-kilometre and ton-kilometre).

Looking at passenger transport, cars show the highest average³⁵ costs³⁶. Other modes have similar magnitude of average external costs, except rail, which show the lowest external costs. Looking at just the environmental costs³⁷, cars and aviation are the passenger modes with the highest external costs.

As far as freight is concerned, lorries show the highest average costs, followed by inland waterways (roughly 50% less than lorries), rail (roughly two third less than lorries) and maritime (80% less than lorries). Lorries have the highest environmental footprint, closely followed by inland waterway transport. On

³³ SWD(2020) 331 final.

³⁴ European Commission. Study Sustainable Transport Infrastructure Charging and Internalisation of Transport Externalities (June 2019).

³⁵ The average cost is driven, for all modes, by the occupancy factor. For cars, this is on average equal to about 1.6 passenger/vehicle. Increasing the number of passengers per vehicle could lead to a significant cost reduction.

³⁶ Motorcycles are actually the passenger mode with the highest external costs per passenger-kilometre, due to high accident and noise costs. However, the total cost of motorcycles is limited due to their low modal share.

³⁷ These costs are already included in EUR 900 billion figure. They include climate change, air pollution, noise and habitat damage costs.

average, rail environmental costs are almost half and maritime almost one third of those of lorries.

The above includes all external costs of individual transport modes, i.e., environmental costs as well as crashes and congestion, with the exception of walking and cycling where data at EU level is not available.

On the other hand, total **taxes and charges** collected from the sector are estimated to amount to at least EUR 310 billion.

i. Accidents

Road accidents lead to around 20 000 fatalities across the EU every year (20 653 in 2022³⁸). Yet, roads in the EU are the safest in the world. The EU accounted for 45 road deaths per million inhabitants in 2021, against 129 deaths per million in the USA³⁹, 70 deaths per million in geographical Europe and 170 deaths per million globally⁴⁰. More than half of all road fatalities in the EU occur on rural roads and 40% of the fatalities occur in urban areas.

ii. Air pollution

Air pollution with PM_{2.5}, to which transport is a contributor, led to 253 000 premature deaths in the EU in 2021⁴¹. In 2021, 97% of the urban population in the EU was exposed to concentrations of fine particulate (PM_{2.5})

above the health-based guideline level set by the World Health Organization (WHO)⁴².

For other pollutants, the perspective is similar, with 76% of the urban population exposed to particulate matter (PM₁₀) concentration above the WHO guidelines, 94% for Ozone (O₃) and 90% for Nitrogen dioxide (NO₂). More than half of all NO_x emissions stem from transportation, which also plays a significant role in the overall emissions of other air pollutants.

Road transport, in particular, continues to make a significant contribution to emissions of NO_x. This is particularly problematic in urban areas because emissions occur close to the ground and mainly in densely populated areas. In street canyons with a high density of buildings and high levels of road traffic, NO_x emissions can be very high locally, leading to exceedances of air quality standards.

Maritime transport contributes significantly to air pollution in Europe, in particular Sulphur oxides (SO_x) which are known to be harmful to human health, causing respiratory symptoms and lung disease. In the atmosphere, SO_x can lead to acid rain, which can harm crops, forests, and aquatic species, and contributes to the acidification of the oceans.

Significant **policy efforts**, although with differences across modes, have addressed transport-related air pollution in recent decades and have led to some notable improvements⁴³.

³⁸ Eurostat. Person killed in road accidents.

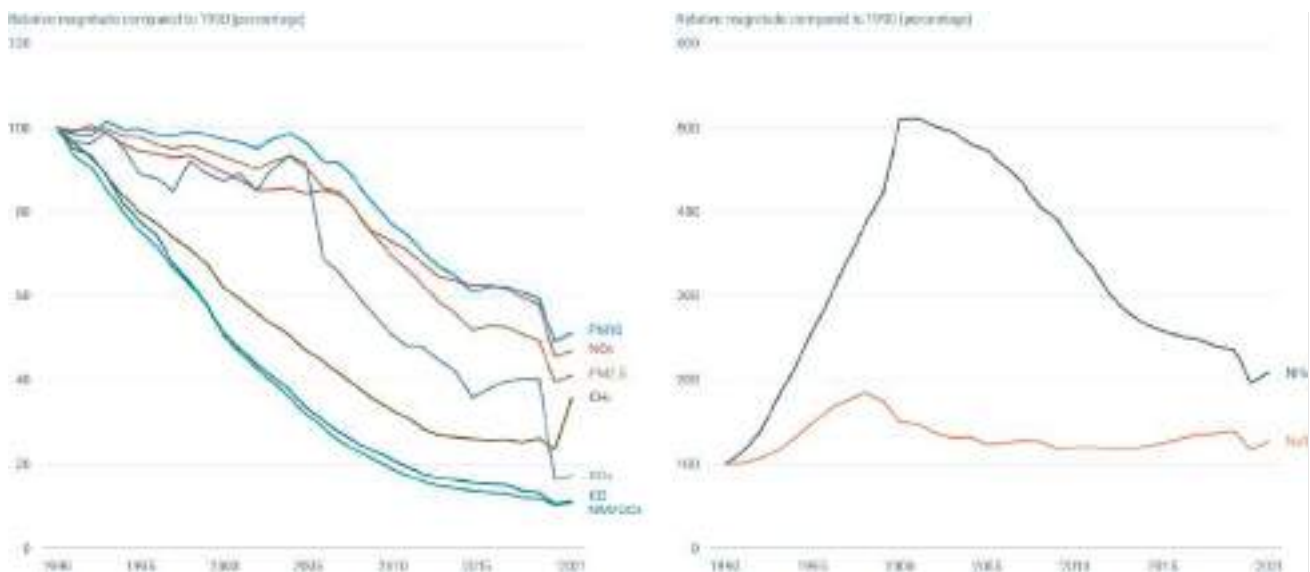
³⁹ U.S. Department of Transportation. Overview of Motor Vehicle Traffic Crashes in 2021. Own calculations based on the population estimates from the United States Census Bureau.

⁴⁰ World Health Organization. Estimated road traffic death rate per 100 000 population.

⁴¹ European Environment Agency. Premature deaths due to exposure to fine particulate matter in Europe.

⁴² European Environment Agency. Europe's air quality status 2023.

⁴³ European Environment Agency. Emissions of air pollutants from transport in Europe (18 December 2023).

Figure 31: Emissions of pollutants from transport in the EU

Source: European Environment Agency. Emissions of air pollutants from transport in Europe. 18 December 2023⁴⁴

For instance, the Ambient Air Quality Directive set limits or target values for concentrations of pollutants in the ambient air, while the National Emission Ceilings (NEC) Directive sets emission reduction commitments on total national emissions for five air pollutants (NO_x, SO₂, NMVOC, NH₃ and PM₁₀). The Commission proposed in 2022 a revision of the Ambient Air Quality Directive, to align air quality standards more closely with World Health Organization (WHO) guidelines, while putting the EU on a trajectory to achieve the zero-pollution ambition by 2050.

Emissions from the transport sector are further regulated by vehicle emissions standards and fuel quality requirements. Local and regional air quality management plans, including initiatives such as low-emission zones in cities, are also in place in many areas. SO_x and NO_x emissions from international shipping are regulated by Annex VI to MARPOL Convention of the International Maritime Organisation. SO_x requirements are transposed in EU law by the Directive on sulphur content in certain liquid fuels including marine fuels. The requirements to connect to onshore power supply (OPS) in the FuelEU

Maritime regulation⁴⁴ are expected to benefit local air quality as well.

Together, such policies have delivered progress in **reducing the emissions** of many pollutants from the transport sector. Between 1990 and 2021 (thus including COVID-19 pandemic effects) across the EU-27, emissions of nitrogen oxides (NO_x) from transport decreased by 53%, sulphur oxides (SO_x) by 83%, carbon monoxide (CO) by 89%, methane (CH₄) and non-methane volatile organic compounds (NMVOCs) by 64% and 89% respectively. At the same time, between 2000 and 2021, EU-27 transport emissions of particulate matter (including non-exhaust emissions) with particle diameter of 10µm/2.5µm or less (PM₁₀ / ...) decreased by 47% / 56% respectively.

The onset of the COVID-19 pandemic had an influence on these figures, due to the significant contraction in transport volumes during 2020 and 2021. Indeed, the same reductions calculated between 1990 (2000 for PM) and 2019 were considerably lower for some pollutants: 42% for NO_x, 60% for SO_x,

⁴⁴ Regulation (EU) 2023/1805.

87% for CO, 74% for CH₄, 88% for NMVOCs, 39% for PM₁₀, 47% for PM_{2.5}.

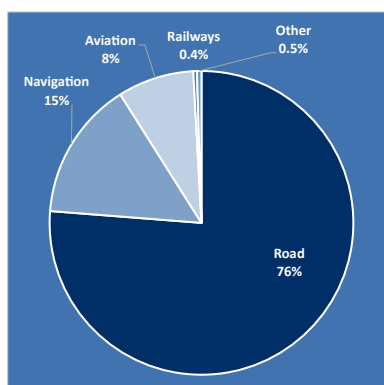
At the same time, two air pollutants have demonstrated **substantial growth** in recent decades. Between 1990 and 2021, transport emissions of ammonia (NH₃) increased by 109% (136% in 1990-2019) while nitrous oxide (N₂O) increased by 28% (39% in 1990-2019). Although transport contributions of NH₃ emissions are limited compared to agriculture and other sectors, their impact on air quality, especially within cities, is reported to be very high. N₂O, while a powerful greenhouse gas, is also currently considered a dominant ozone depleting substance.

iii. Climate change

The share of **greenhouse gas (GHG) emissions from transport** (including international maritime and aviation) in total greenhouse gas emissions of the EU has continuously increased from 17% in 1990 to 27% in 2021.

Greenhouse gas emissions from **road transport** alone have increased by 21% between 1990 and 2021. The sector represented 76% of the GHG emissions from transport in the EU in 2021 (Figure 32), up from 75% in 1990.

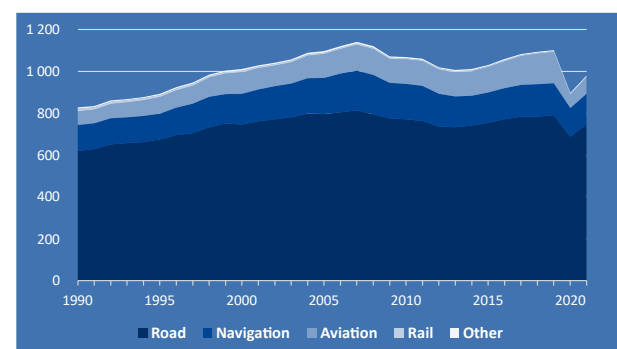
Figure 32: Share by mode in transport GHG emissions, including international bunkers, in the EU (2021)



Source : European Commission EU Transport in Figures, Statistical Pocketbook 2023. For railways, indirect emissions from electricity consumption are excluded.

When looking at greenhouse gas emissions from individual modes of transport in the EU, and including international bunkers, the rise in emissions from aviation since 1990 stands out, whereas the railway sector has been the only transport mode to consistently reduce greenhouse gas emissions since 1990 (Figure 33) also through electrification (given that indirect emissions are not accounted for in the statistics).

Figure 33: Evolution of GHG emissions by transport modes in the EU (million tonnes CO₂ equivalent)



Source : European Commission EU Transport in Figures, Statistical Pocketbook 2023. For railways, indirect emissions from electricity consumption are excluded, including international maritime and aviation.

For **aviation**, according to the European Aviation Environmental Report 2022 by the EASA, the number of flights at EU27+EFTA airports increased by 15% between 2005 and 2019 to 9.3 million, while passenger kilometres almost doubled (+90%). However, flights declined to just 5.1 million in 2021 due to the COVID-19 pandemic.

The CO₂ emissions of all flights departing from EU27+EFTA airports reached 147 million tonnes in 2019, which was 34% more than in 2005. The average grams CO₂ emitted per passenger kilometre went down by an average 2.3% per annum to reach 89 grams in 2019, equivalent to 3.5 litres of fuel per 100 passenger kilometres.

In 2019, aircraft operators covered 22% of their CO₂ emissions by purchasing allowances under the EU ETS. The ETS has not fully

mitigated the growth in CO₂ emissions due to the growth in emissions from flights outside its applicability scope.

For **maritime transport**, the CO₂ emissions reported under the monitoring reporting and verification framework decreased by 7.9% compared to pre-COVID-19 levels in 2019 (it should be noted that the 2019 figure did include emissions related to the United Kingdom, but the fleet covered was larger in 2022)^{45, 46}.

iv. Noise

Long-term exposure to **noise pollution** harms physical and mental health. In Europe, at least one in five citizens is exposed to chronic levels that can cause adverse health effects.

EUs' estimates show that⁴⁷:

- About 95 million people are exposed to harmful levels of road traffic noise.
- At least 20% of the urban population is exposed to levels considered harmful to health. In many cities, this percentage can reach 50% of the urban population.
- At least 18 million people are highly annoyed and 5 million are highly sleep disturbed by long-term exposure to noise from transport in the EU.
- Long-term exposure to transport noise causes ~11 000 premature deaths and 40 000 new cases of ischaemic heart disease.

Transport related noise generates an external cost of more than EUR 60 billion⁴⁸.

According to the data reported under the Environmental Noise Directive, around 100 million people in the EU are exposed to average noise levels of 55 dB or higher during all times of the day for road traffic noise, 20 million for railway noise, 4 million for aircraft noise and 1 million for noise caused by industries.

Similarly, road traffic is by far the biggest source of environmental noise during night-time, affecting around 75 million people, followed by rail with 15 million people, air with 1.5 million people and industrial noise with 0.5 million people. While aircraft noise does not affect a wide geographical area, it is typically perceived as more annoying and sleep disturbing than other sources at the same noise levels.

v. Congestion

The slow deployment of smart mobility systems, which could better manage traffic flows, and problems with interoperability are causing considerable economic losses in unexploited capacity. In most EU countries, average drivers waste 20 to 40 hours per year due to traffic (Figure 34).

Annual road congestion external costs have been estimated in monetary terms to amount to almost 2% of the EU-27 GDP in 2016⁴⁹.

For other modes, congestion is producing much fewer negative externalities than in the road sector (although congestion/scarcity costs exist and can lead to loss of connectivity

⁴⁵ Regulation (EU) 2015/757.

⁴⁶ COM(2024) 151.

⁴⁷ European Environment Agency. Environmental noise in Europe – 2020.

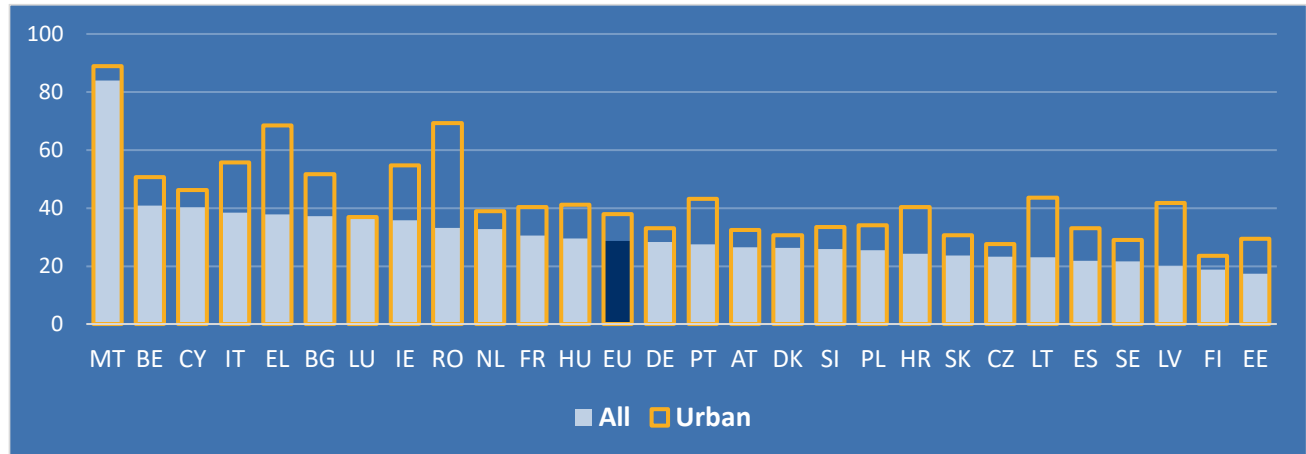
⁴⁸ European Commission. State of play of Internalisation in the European Transport Sector (2019).

⁴⁹ European Commission. Handbook on the External Costs of Transport - Version 2019.

and reduced competition between operators) and accident costs are much smaller (around EUR 2.5 billion altogether). They produce

generally fewer external costs than the road sector, including in terms of greenhouse gas and pollution.

Figure 34: Average peak-hour delay per representative driver in the EU (hours per year, 2023)



Source: European Commission Joint Research Centre. Calculations based on TomTom data

Mainly in densely populated countries of the EU, such as the Benelux countries or Malta, road congestion continues to be an important problem.

This development is further aggravated by growing urbanisation, unbalanced urban planning, car-friendly taxation policies, as well as insufficient financing and slow progress towards preferential urban planning for public transport.

Intelligent transport systems have been designed to better manage road traffic, especially in cities.

A more efficient use of roads could also be achieved through time-differentiated congestion charging. However, its application on EU roads today is marginal. On interurban roads, time-differentiated charges are applied to all vehicles only on a handful of short stretches of motorways in France and Spain.

vi. Internalisation of externalities

Policies applying the “**user pays**” and “**polluter pays**” principles and monetary incentives to users, consumers, and business, could help to reduce the environmental impact and internalise the external costs of transport. Overall, substantial progress is still needed to effectively internalise the external costs in the transport sector.

The **EU ETS system** is at the core of the European Union policies to make polluters pay for their greenhouse gas emissions, helps bring emissions down and generates revenues to finance the EU's green transition, mostly through national budgets but also by funding low-carbon innovation and energy transition through the Innovation Fund (EUR 40 billion over the period 2020-2030⁵⁰) and the Modernisation Fund (EUR 57 billion over the period 2021-2030⁵¹). The EU ETS covers emissions from around 10 000 installations in the energy sector and manufacturing industry, as well as aircraft operators flying within the EU and departing to Switzerland and the United Kingdom (around 40% of the EU's emissions). Since January 2024, EU ETS also

⁵⁰ Assuming a carbon price of EUR 75 per tonne.

⁵¹ Assuming a carbon price of EUR 75 per tonne.

started covering emissions from maritime transport. To ensure a smooth transition, shipping companies only have to surrender allowances for a portion of their emissions during an initial phase-in period, up to 2027⁵².

As part of the 2023 revisions of the ETS Directive, a new emissions trading system named ETS2 was created, separate from the existing EU ETS. This new system will cover and address the CO₂ emissions from fuel combustion in buildings, road transport and additional sectors (mainly small industry not covered by the existing EU ETS).

Transport fuel **taxes** can encourage fuel efficiency and a more sustainable use of cars, including the use of more sustainable fuels. The structure of such duties needs to reflect both the carbon and energy content of fuels. Currently, substantial differences in tax rates on fuels can be observed across EU countries, with a general preferential treatment of diesel, which is taxed less than petrol in all EU countries. The EU tax weighted average in the end consumer price was 53% for Euro-Super 95 and 46% for Diesel Oil in January 2024⁵³. Transport taxation may have a significant effect on consumers' preferences when purchasing a car. This includes the registration tax (levied on the purchase of a car) and the vehicle road tax (levied annually on car ownership).

As a general rule, fuel supplied for use in aviation and shipping are fully exempted from taxation under the current Energy Taxation Directive (Directive 2003/96/EC)⁵⁴. A revision of the Directive is ongoing.

The EU adopted new rules on **road charging** in 2022 to improve the polluter-pays principle. The new system aims at improving incentives for more efficient and sustainable road transport. It will phase out time-based vignettes for heavy-duty vehicles on the core Trans-European Transport Network (TEN-T) by 2030, in favour of distance-based charges. It will also introduce EU-wide rules to vary charges for heavy-duty vehicles based on their CO₂ emissions.

Moreover, after a 4-year transition period, external cost charging for air pollution will become mandatory for heavy-duty vehicles, except where it would create unintended traffic diversion.

Directive 1999/62/EC set common rules on distance-based charges (tolls) and time-based user charges (vignettes) for the use of road infrastructure. These rules stipulate that the cost of constructing, operating, and developing infrastructure can be recovered through tolls and vignettes. The rules are generally stricter for charges applied on the TEN-T road infrastructure and motorways than on other roads. Directive (EU) 2022/362 extended the rules to include passenger cars and removed an exemption from those rules for small heavy-duty vehicles.

Several European countries levy **ticket taxes** on air passengers, of which part is earmarked or re-invested in the aviation industry⁵⁵.

⁵² Directive (EU) 2023/959. 2025: surrender of 40% of emissions reported in 2024; 2026: surrender of 70% of emissions reported in 2025; 2027 onwards: surrender of 100% of reported emissions.

⁵³ European Commission. Total taxation share in the end consumer price for Euro-Super 95 and Diesel Oil (bulletin of the 8th of January 2024).

⁵⁴ European Commission. Revision of the Energy Taxation Directive (ETD): Questions and Answers (14 July 2021).

⁵⁵ European Commission. Taxes in the field of aviation and their impact – Final report (2019).

3. Smart mobility

In the near future, the emergence and wider use of game-changing **new mobility technologies** can be expected, such as drones (unmanned aircraft) for commercial applications, autonomous vehicles, hydrogen powered aircraft or electric waterborne transport.

The European Commission aims at developing the framework to facilitate the development and deployment of digital tools and systems. Specifically, there is a need to work towards facilitating testing and making the regulatory environment fit for innovation, notably with regard to Artificial Intelligence. There is also a need to deploy new technologies to make the whole transport system more efficient, and the multimodal mobility seamless. The Commission is investing heavily in research and pre-deployment testing through funding instruments such as Horizon Europe and Connecting Europe Facility.

Considerable investment has taken place in the EU in research and development to support progress with technological and non-technological innovation. In this context, an important role is played by the Intelligent Transport Systems Master Plan, and by transport related Innovation Partnerships (Shift2Rail / Europe's Rail, SESAR, Clean Aviation, Fuel Cells, and Hydrogen Joint Undertaking, Zero Emission Waterborne Transport Partnership).

Digitalisation and automation have also an important **potential for further improvements** when it comes to safety, security, reliability, and comfort, as well as maintaining EU's leadership in transport equipment manufacturing and services while improving the global competitiveness through efficient and resilient logistic chains.

This automation and digitalisation could reduce the number of accidents due to human

error, the energy consumption and pollution, as well as cutting costs associated with congestion. It allows for better organisation and execution of travel and transport operations. It also supports a much better integration of modes of transport (multimodality) and help reduce emissions as well as cut congestion. Finally, it could be the key element to move from privately owned to shared vehicles and drastically increase occupancy rates.

However, digitalisation and automation of transport services also raise new challenges for the service providers, especially in terms of personal data protection, cyber security, and user acceptance. Cyber-attacks may lead to delays of services, damage to physical systems, data theft or even passenger injury or loss. There are also concerns that remotely controlled aircrafts and automated vehicles may be subject to hacking or hijacking from distance. Similar concerns arise in the maritime area, because of growing digitalisation of sea navigation.

A dedicated legal framework was established with the **Intelligent Transport Systems Directive** in 2010, subsequently revised in 2023.

The revision will make high-quality and timely data available for services such as multimodal journey planners and navigation services. A smarter and interoperable transport system will allow the more effective management of traffic and mobility across transport modes, enabling users to better combine the most sustainable modes of transport.

The new rules also extend the scope of the directive scope to cover emerging services, such as multimodal information, booking and ticketing services (for example apps to find and book journeys that combine public transport, shared car or bike services), communication between vehicles and infrastructure and automated mobility.

Pursuing the ambition for increased digitalisation of processes, targets are also set for digitisation of crucial information. For instance for speed limits, roadworks and multimodal access nodes, as well as the delivery of essential services such as information on road safety. The benefits for transport users will include real-time information and digital, intelligent road infrastructure, as well as more accurate intelligent speed assistance systems.

The revised rules also aim to facilitate the deployment of Cooperative ITS, which allows vehicles and road infrastructure to communicate with one another, for example to warn about unexpected events, such as a traffic jam ahead. To ensure safety is guaranteed on the road, the agreement is making sure there is trust between all C-ITS equipped vehicles and C-ITS road infrastructure across the Union⁵⁶.

3.1. Multimodal mobility

Multimodal digital mobility services (MDMS) can be defined as "systems providing information about, inter alia, the location of transport facilities, schedules, availability and fares, of more than one transport provider, with or without facilities to make reservations, payments or issue tickets" (e.g., route-planners, Mobility as a Service, online ticket vendors, ticket intermediaries). They help both passengers and/or other intermediaries compare different travel options, choices, and prices, and can facilitate the sale and re-sale of mobility products from different operators, whether they are private or public, within one mode or across modes. By facilitating the access to information, booking and payment of mobility services, these services will

improve the sustainability, resilience, efficiency, and comfort of the transport system⁵⁷.

To make this a reality, there is a need to overcome issues related to the availability and accessibility of data, sub-optimal cooperation between suppliers and vendors and an overall lack of interoperability.

3.2. Digitalisation and innovative mobility

3.2.1. Digitalisation of transport and logistics

The **Digital Transport and Logistics Forum, DTLF**, an expert group of the European Commission, brings together public and private stakeholders from various transport and logistics communities. The new EU Regulation (EU) 2020/1056 on electronic freight transport information (eFTI) entered into force in August 2020, and will become fully applicable as of August 2025. Currently, the DTLF experts are assisting the Commission in exploring and preparing options for the implementation specifications of the eFTI Regulation.

The **eFTI Regulation** establishes the legal framework for electronic information exchanges between the economic operators and the Member States authorities on the movement of cargo in the European Union. The information concerned is that required by the EU and national legislation to prove compliance with EU and national rules on the

⁵⁶ European Commission. Sustainable transport: rules to boost intelligent transport systems for safer and more efficient transport agreed (June 2023).

⁵⁷ Ares(2021)6062336. Proposal for a Regulation of the European Parliament and of the Council addressing market challenges hampering the development of Multimodal Digital Mobility Services (MDMS).

movement of goods by rail, road, inland waterways, and air.

The Regulation will constitute a big step forward in the digital transformation of freight transport in Europe, with important benefits to both operators and authorities.

- **reduced administrative costs in transport and logistics** (the sector is expected to save up to EUR 27 billion over the next 20 years, according to European Commission estimates)
- **improved overall efficiency of the logistics chain**, as it will also facilitate the electronic exchange of information between the economic operators themselves.
- **more efficient enforcement of freight transport rules in the Union**, by facilitating risk-based controls and by ensuring the availability of more data of high and standardised quality that could be used for monitoring and statistical purposes, among others.

The eFTI Regulation will complement other EU initiatives supporting freight information exchanges in electronic format, in particular the European Maritime Single Window environment and EU Single Window Environment for Customs.

3.2.2. Automated mobility

The European Commission supports the introduction and deployment of **connected and automated mobility**.

The 29 signatory countries of a Letter of Intent signed at Digital Day 2017 agreed to designate 5G **cross-border corridors**, where vehicles can physically move across borders and where the cross-border road safety, data access, data quality and liability, connectivity and digital technologies can be tested and demonstrated.

The European Commission's ambition is to focus on these corridors in future EU automated driving projects in the area of digital policies, with links to cybersecurity, privacy, 5G, internet of things, data economy, free flow of data, etc.

The EU supports 3 projects (part of the European Commission's 5G Public-Private Partnership) which will set up 5G trials over more than 1000 km of highway including four cross-border corridors: Metz-Merzig-Luxembourg, Munich-Bologna via the Brenner Pass, and Porto-Vigo and Evora-Merida, both between Spain and Portugal.

In maritime transport, the European Commission actively prepares for Maritime Autonomous Surface Ships (MASS). Regular exchanges take place within a dedicated expert group with EU/EEA Member States and in annual International Ship Autonomy and Sustainability Summits fostering dialogue of industry, researchers, test projects and administrations. The European Commission actively participates in the development of the IMO MASS Code, the first international regulation of autonomous ships, for instance by providing submissions, participating to various Committee meetings, contributing with studies and sharing insights from EU co-funded research projects.

3.2.3. Drones regulatory framework

The development of an ambitious regulatory framework for drones presents a unique opportunity for the EU to introduce rules for an area where there are very few frameworks in place at the level of EU Member States or globally, with safety taking a central role. Moreover, it allows for emerging drone and eVTOL ('electric Vertical Take Off and Landing' aircraft) technologies to contribute to the twin green and digital transition, in addition to

strengthening EU competitiveness and bolstering economic growth⁵⁸.

The regulatory framework began to take shape following the introduction of the Regulation 2018/1139 in 2018, and currently consists of three key pieces of legislation.

- Regulation 2019/947 lays down detailed provisions for the operation of unmanned aircraft systems (UAS), as well as for personnel, including remote pilots and organisations involved in those operations.
- Regulation 2019/945 sets the requirements for the design and manufacture of UAS.
- Regulation 2021/664 lays down rules and procedures for the U-space (an air traffic management system for UAS).

In 2022 the Commission published the Drone Strategy 2.0, a policy document consisting of 19 flagship actions to build the right regulatory and commercial environment for the future EU drone air space and market.

⁵⁸ End June 2023, there were over 1.3 million registered UAS operators in the EU and over 1.2 million remote pilot certificates had been issued. Source: ENCASIA - European Network of Civil Aviation Safety Investigation Authorities.

4. Resilient mobility

Resilience covers several aspects of EU transport policies, such as targeting the necessary recovery investments to modernise and green the sector, strengthening the European Single Market, the need for a just transition for both users and workers and the need for transport and mobility to remain safe and secure.

The COVID-19 pandemic has shown how important and vulnerable the Single Market is, and the social, health and economic costs when free movement of people and goods is severely constrained. The preservation of supply chains and a coordinated European approach to connectivity and transport activity are essential to overcome any crisis and strengthen the EU's strategic autonomy and resilience.

The quality and capacity of transport infrastructure will have to be improved to handle the expected growth in passenger and goods mobility and to cater for alternative fuels and smart transport infrastructure needs.

4.1. Single European Transport Area

The development of seamless and efficient transport services across Europe is key to fulfilling three of the four freedoms of the internal market: the free movement of people, services, and goods.

Thus, the overarching goal of EU transport policy is the creation of a **Single European Transport Area** and the completion of the internal market for the transport of goods and passengers, as continuously underlined, up to the Sustainable and Smart Mobility Strategy set in 2020. Fostering cohesion, reducing regional disparities as well as improving

connectivity and access to the internal market for all regions, remains of strategic importance for the EU.

The COVID-19 pandemic had a significant impact on mobility. In the context of the recovery from this severe crisis, public support should help mobility "build back better" and leap forward to a sustainable and smarter future.

Despite some progress, legal, administrative, and technical barriers to market entry persist in transport sectors in the majority of the Member States, causing inefficiencies and extra costs to users. For example, in aviation, the fragmentation of the EU airspace leads to comparatively costly air navigation services. In railways, more competition could lead to greater efficiency and to savings in subsidies. Fragmentation of the transport market risks limiting the quality of transport services in Europe and might leave growth potential untapped unless European policy initiatives towards a Single Market for transport are thoroughly implemented at the national level.

In addition, gaps in the social legislation related to transport and divergent national practices have led to deteriorating social conditions for transport workers and may also worsen the quality of transport services. Market openness and social cohesion are thus intrinsically linked.

4.1.1. Road transport

In the **road transport** sector, the market for international (intra-EU) freight and passenger services has been entirely opened to competition, but domestic transport remains largely protected.

On the freight side, rules were revised with the Mobility Package I, adopted in July 2020. One of the objectives of the revision was to improve the working conditions of drivers, by clarifying and strengthening the driving and

rest time rules, by establishing specific rules for posting of road transport drivers and by improving enforcement of those rules with the aid of smart tachograph and other digital systems (e.g., IMI – Internal Market Information system and its public interface). The other objective was to eliminate distortions of competition on the internal road transport market by clarifying the existing rules on the access to the haulage market and to the profession of road transport operator and strengthening their enforcement. Further limitations to cabotage operations are part of the newly adopted rules. These limitations include an obligation for vehicles performing cabotage operations to return to the country of origin at least every 8 weeks ("return of trucks" rule).

Common rules for access to the international **long-distance coach market** entered into force in December 2011. This regulation makes the rules clearer and less complex, improves enforcement and avoids unnecessary administrative burden. There is conclusive evidence that the liberalisation of national markets by Member States in combination with the liberalisation of international services created a favourable environment for the expansion of coach services at national and international level⁵⁹.

For instance, in Germany, coach travellers doubled to 16 million a year after the market opening (all but 4 million on domestic routes) and accounted for 11 % of the public-

transport market. Cross-border travel has also surged as a result.

On 24 April 2024, the European Parliament and the Council adopted a revision of the rules on driving times and rest periods in the **occasional passenger transport** sector, amending Regulation (EC) No 561/2006.

4.1.2. Rail transport

Rail transport in particular has not yet reached its full potential and remains a sector with many restrictive rules: administrative, technical and regulatory barriers are still present in most EU countries. The creation of a **Single European Rail Area** requires major efforts to achieve technical interoperability and to ensure that rolling stock is able to run across national borders. Moreover, standardisation of systems and equipment in its broader sense is crucial to gain efficiency and reduce costs.

The lack of effective competition may explain why in some countries rail transport has not developed customer-oriented services, innovative business models and costs/price reductions that can be witnessed after market opening in other transport modes. The degree of competition in the railway sector, measured as the total market share of all but the biggest railway companies, remains quite low despite improvements (Figure 35).

⁵⁹ SWD(2017) 358 final.

Figure 35: Market share of all but the principal rail undertaking (2021)

Source: European Commission, EU Transport in Figures, Statistical Pocketbook 2023. Not applicable to Cyprus and Malta (no railways); nor to Ireland and Luxembourg (no competition in either freight or passenger markets).

The successive **railway packages** have now created the conditions for a genuine Single European Rail Area with open markets and technical interoperability, to ensure that trains are able to operate with ease across national borders, and the same rolling stock be used all across Europe, but full implementation is still required to reap the benefits. Although a low number of competitors may reflect the small size of a market, various barriers to entry still hamper the development of competition in rail.

The proposed Regulation on the use of railway infrastructure capacity⁶⁰, part of the Greening Freight package⁶¹, is expected to optimise the use of railway infrastructure capacity, improve cross-border coordination, increase punctuality and reliability, and ultimately attract more freight companies to rail. Passengers will benefit from additional rail services as the capacity of the network will be better used, impacting positively the cross-border services by enabling more frequent connections and earlier ticket booking, among others.

The **rail freight market** has been fully open to competition since 2007. Between 2012 and

2021 the market shares of competitors increased in most EU countries, especially in Italy and Sweden, while the largest decrease was in Estonia (both on passenger and freight market).

Yet, rail freight transport continues to face difficulties in competing with road transport, particularly in terms of punctuality and reliability. The sector struggles with infrastructure bottlenecks, interoperability problems, and digitalisation. In terms of planning and operations, there are challenges with the provision of capacity (train paths) of sufficient quality and quantity, inefficient operational processes at borders between networks, and ineffective management of incidents and crisis situations⁶².

In the **rail passenger market**, the shares of competitors are lower and less diverse. In most countries incumbent rail companies have control over 75% of the market, except in Poland (55%), Sweden (60%) and Italy (65%). In 8 countries there were still no alternative operators in 2021.

The 4th Railway Package aimed to open up the market for rail passenger transport services. It

⁶⁰ COM(2023) 443/2.

⁶¹ European Commission. Green Deal: Greening freight for more economic gain with less environmental impact.

⁶² SWD(2023) 288 final.

establishes open access rights for railway companies in the EU from 2020 and lays down the principle of competitive awards for public service contracts. This Railway Package is set to complete the market opening process by dismantling the remaining legal monopolies in domestic passenger markets. It introduces the principle of competitive tendering for public service contracts (PSCs) and improves the way infrastructure is governed to create a non-discriminatory environment. However, until the package is fully implemented, important challenges remain to be addressed on the ground, mainly regarding the access of new market entrants to rail infrastructure.

Indeed, new commercial operators might face discrimination in obtaining access to rail infrastructure and essential service facilities, such as stations and maintenance workshops, which are often owned and operated by incumbents. Incumbents may also engage in anti-competitive behaviour or rely on cross-subsidies to keep competitors out of the market.

In 2020, Public services operation (PSO) passenger services represented on average 64% of the total passenger kilometres in the EU, an increase compared to the average 60% reported for 2019. The rise in the share of passenger services provided under PSOs can be attributed to a more than proportional drop in the number of passenger-km in commercial services in the context of the pandemic. This average hides significant differences across countries. In Denmark, Estonia, Ireland, Luxembourg, the Netherlands, all passenger services are covered by public service contracts⁶³. The use of competitive tenders for the award of these contracts is a key indicator of the degree of market opening.

4.1.3. Waterborne transport

i. Maritime transport

Maritime transport needs to overcome bottlenecks and act on administrative simplification, port capacity and efficiency, connection to the hinterland and access to financing. The lack of high-quality infrastructure or low-performing port services can result in significant extra costs for shippers, transport operators and consumers.

The Commission has taken initiatives to consolidate the internal market for sea shipping services and better connect EU ports to create an EU maritime transport space without barriers:

- For EU companies, port and terminal costs can represent up to 25% of the total door-to-door logistic cost⁶⁴. The Ports Regulation⁶⁵ introduced rules on transparent public funding to improve market access and make port investments and operations more efficient.
- The establishment of a European Maritime Single Window⁶⁶ environment is central to simplifying and harmonising reporting formalities, reducing administrative burden on shipping operators, and taking full advantage of digital means to optimise logistic chains.

ii. Inland waterways transport

Inland waterways transport is in danger of losing its comparative advantage as an

⁶³ COM(2023) 510 final.

⁶⁴ COM(2012) 752 final.

⁶⁵ Regulation (EU) 2017/352.

⁶⁶ Regulation (EU) 2019/1239

efficient, low external costs transport mode unless long-term structural changes are made to improve the quality of its operating conditions. Suitable means include investment in better infrastructure, skills, digitalisation, and integration into the logistics chain. This requires both the definition of common standards at EU level and cross-border cooperation between EU countries, e.g., in the framework of the Danube Strategy.

In January 2024, the European Commission adopted a proposal to improve traffic management on the EU's rivers and canals⁶⁷. The proposal updates the existing Directive on River Information Services, including provisions on traffic information and management, on information on the condition of waterways and infrastructure, on voyage planning for skippers, and on reporting to authorities.

4.1.4. Air transport

Since the early 1990's, the aviation market has been gradually liberalised. The creation of the **aviation Single Market** has produced significant socio-economic benefits for passengers, businesses, and regions. Intra-EU routes provide access to both large cities as well as peripheral regions. The fostering of competition in the market has contributed to making air travel affordable, to creating jobs and to stimulate business.

Air traffic has more than doubled since 1990, with more than a billion passengers travelling through some 500 European airports in 2019, which saw major delays and generated significant additional cost and emissions due to insufficient airspace capacity. Traffic has

not fully recovered yet after the COVID-19 pandemic, with 820 million passengers in 2022⁶⁸. In January 2024, the number of flights in the network was at 90% of 2019 levels on the Eurocontrol network (22 714 daily flights on average end of January⁶⁹).

While it has been a success overall, there remain challenges and room for improvement in some areas of the functioning of the European aviation market, which is also linked to the need to make aviation more sustainable and efficient given the increasing capacity problems, while maintaining a high level of safety. In particular, the **Single European Sky** (SES) still remains incomplete. The current fragmentation of the airspace leads to inefficiencies, additional fuel burn and extra costs for the whole aviation value chain.

In March 2024, the Council presidency and the European Parliament reached a provisional agreement on the reform of the Single European Sky⁷⁰. The aim of the reform is to improve the performance, organisation and management of European airspace and the provision of the air navigation services to increase capacity, lower costs and increase the system's adaptability, while also trying to reduce aviation's impact on environment and climate.

The COVID-19 pandemic and the Russian invasion on Ukraine have also demonstrated the need to increase resilience and efficiency of the EU regulatory framework relating to air services and airport capacity management and pricing.

⁶⁷ COM(2024) 33 final.

⁶⁸ Eurostat. Air passenger transport by reporting country.

⁶⁹ Eurocontrol. European Aviation Overview (29 January – 04 February 2024).

⁷⁰ Council of the European Union. Single sky reform: Council and Parliament strike a deal to improve efficiency of air space management in the EU (6 March 2024).

4.1.5. Common challenges

i. Digitalisation and multimodality

In the light of a wave of technological innovation and disruptive business models in road transport (such as ride sharing, automation and mobility as a service...), both the possibilities and demand for making transport safer, more efficient, and sustainable have increased.

The availability of digital communication technologies in all transport modes provides opportunities to increase these and facilitate a more seamless multimodal transport. Insufficient cross-border coordination, lack of fair intermodal competition and administrative barriers are drivers for the lack of harmonisation along the logistics chain, which ultimately also represents an obstacle to multimodality in freight transport.

For passengers, intelligent systems for interoperable and multimodal scheduling and the development of mobility as a service could lead to an integrated transport system that would deliver door-to-door mobility solutions. A better coordination between transport modes and overcoming market fragmentation could unleash growth potential.

ii. Social protection

On the social legislation in **road transport** and its enforcement, as part of the 'Mobility Packages', the rules have been revised to clarify minimum standards for social protection and pay of posted workers in the (road) transport sector.

In the **maritime sector**, there has been progress since the entry into force of the Directive incorporating the 2006 International Labour Organization Maritime Convention in EU law⁷¹.

In **aviation**, the situation of highly mobile workers deserves attention. The European Court of Justice has brought clarifications in its case law on the competent court and applicable law to employment contracts of mobile workers, including in aviation⁷².

iii. Fair competition

The Single European Transport Area, as envisaged by the Commission, addresses the market functioning issues by **opening the transport sector** to competition, which does not exclude the need for action at national level.

State funding of **regional airports** is often needed to ensure territorial cohesion. However, undue distortion of competition in subsidising economically unviable airports must be avoided. Sustainable growth of airports and airlines requires full compliance with state aid rules. EU and non-EU air carriers benefit from equal access opportunities to the EU market. Nonetheless, this is not always the case in non-EU countries. Furthermore, the ongoing and expected **consolidation** in the air services sector may require regulatory changes relating to air services and airports to ensure that consumers benefit from a competitive market that delivers affordable connectivity.

In **maritime transport**, the 'Ports Regulation' requires that financial relations between public authorities and the port managing body, or any other entity that

⁷¹ Council Directive 2009/13/EC

⁷² European Court of Justice, Judgment of 14 September 2017, *Sandra Nogueira and Others v Crewlink Ireland Ltd and Miguel José Moreno Osacar v Ryanair Designated Activity Company*, Joined cases C-168/16 and C-169/16.

provides port services or credging and receives public funds, must be reflected transparently in the accounting system. Thus, the risk of undue cross-subsidisation is reduced.

In **rail**, cases of (restructuring) aid and overcompensation of public service obligations are frequent. In addition, failure to separate infrastructure managers and service operators is not conducive to fair competition or to the efficient use of the infrastructure.

4.2. Transport infrastructure

Investment in transport infrastructure across the EU is key to ensuring connectivity, the sustainable functioning of the economy and cohesion among Member States

4.2.1. Trans-European Transport Network

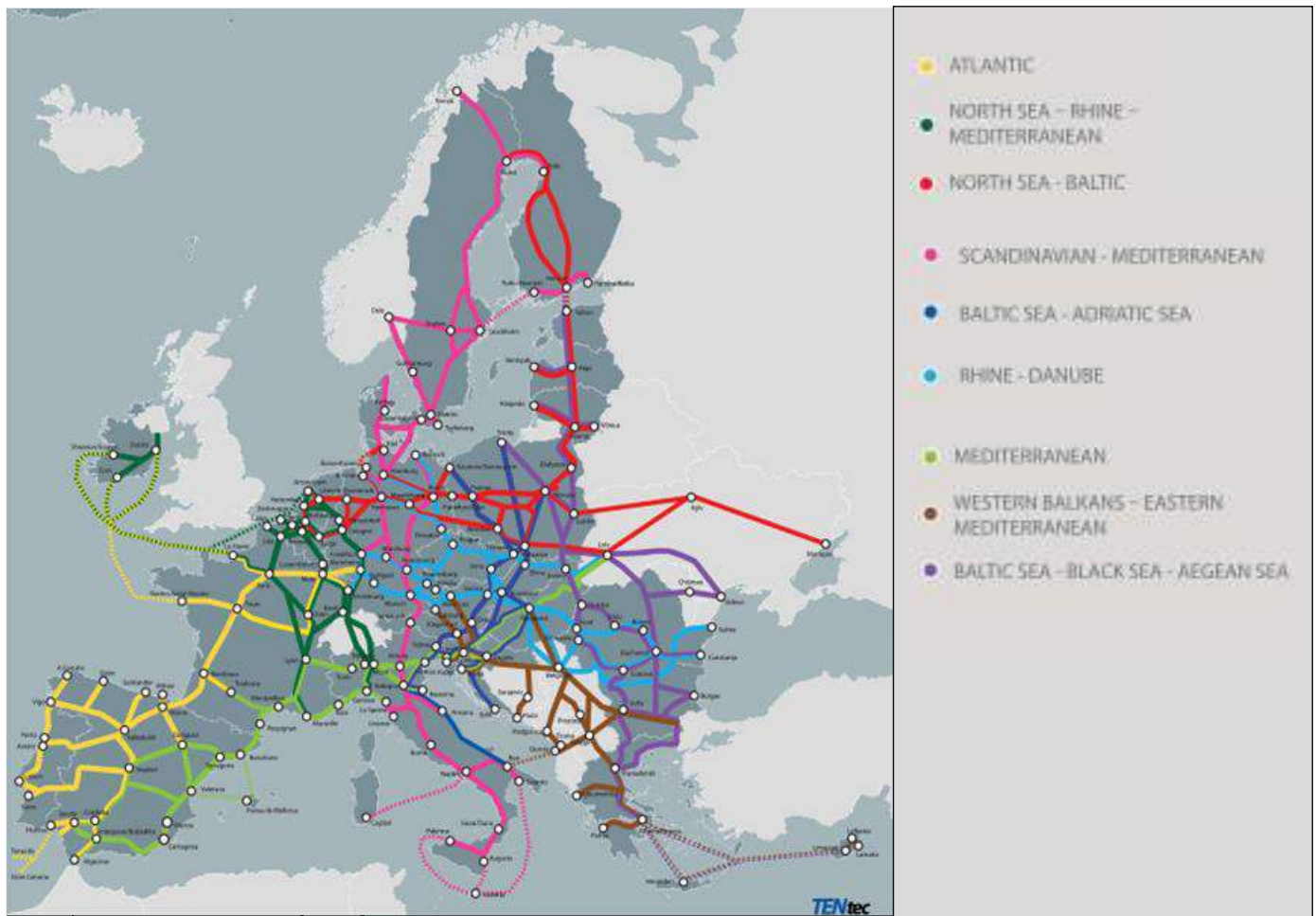
The EU's Trans-European Transport Network (**TEN-T**) policy is a key instrument for the

development of coherent, efficient, multimodal, and high-quality transport infrastructure across the EU. It comprises railways, inland waterways, short sea shipping routes and roads linking urban nodes, maritime and inland ports, airports, and terminals.

The EU's TEN-T fosters the efficient transportation of people and goods, ensures access to jobs and services, and enables trade and economic growth. It also strengthens the EU's economic, social, and territorial cohesion and creates seamless transport systems across borders, without physical gaps, bottlenecks, or missing links. In addition, it aims to reduce the environmental impact of transport and to increase the safety and the resilience of the network.

The TEN-T policy is based on Regulation (EU) No 1315/2013 which establishes a legally binding obligation to develop the TEN-T Network. The Core Network, as strategically the most important part of the TEN-T, shall be completed by 2030

Figure 36: Trans-European Transport network – Revised Indicative map (2023)



Source: European Commission TEN-T revision 2023 - Annex III European Transport Corridors

A revised TEN-T Regulation shall enter into force in June 2024 aiming to make the network greener, more efficient and more resilient, in line with the European Green Deal and the Sustainable and Smart Mobility Strategy and adapting it to the new geopolitical realities. While confirming the requirements set in the current TEN-T and partially extending their ambition and scope, the revised TEN-T will also set additional mandatory targets such as:

- Passenger railway lines on TEN-T core and extended core network shall allow trains to travel at 160 km/h or faster by 2040.
- The European Rail Traffic Management System (ERTMS) must be rolled out on the entire TEN-T network as the single European signalling system in Europe

to make rail safer and more efficient. Consequently, national legacy 'class B' systems must be decommissioned progressively, this will incentivise European industry to invest in ERTMS

- Safe and secure parking areas shall be developed on the core and extended core road network of the TEN-T by 2040, on average every 150 km. This is key to assuring safety and appropriate working conditions for professional drivers.
- Major airports, handling more than 12 million passengers annually, will have to be connected by long-distance rail including at high speed where possible, a major step towards improving connectivity and accessibility for passengers and strengthening the

competitiveness of rail vs. domestic flights.

- The airports with a total annual passenger traffic volume of more than four million passengers will have to provide infrastructure for pre-conditioned air supply to stationary aircraft at aircraft contact stands used for commercial transport operations by 31 December 2030 for airports of the core network and 31 December 2040 for airports of the comprehensive network.
- The number of transshipment terminals must develop in line with the current and expected traffic flows and the needs of the sector. Equally handling capacity at freight terminals must improve. This, as well as allowing the circulation of 740 meters trains across the network, will help shift more freight onto more sustainable transport modes and give a push to Europe's combined transport sector (the use of combinations such as railroad to move freight).
- All 431 urban nodes along the TEN-T network will have to develop Sustainable Urban Mobility Plans to promote zero and low emission mobility.
- The European Maritime Space aims to integrate the maritime space with other transport modes efficiently, viably, and sustainably. For this purpose, short-sea shipping routes will be upgraded, and new ones will be created, while maritime ports will be further developed as well as their hinterland connections.

In addition, transport links with neighbouring third countries will be improved by integrating Ukraine, Moldova as well as the six Western

Balkan partners into the newly established European Transport Corridors

To assure the timely completion of the network – by 2030 for the **core network**, 2040 for the **extended core network**, and 2050 for the **comprehensive network** – this agreement also includes provisions for a better governance, with for instance implementing acts for the main cross-border sections and other specific national sections along the nine European Transport Corridors. **This, together with greater alignment between national transport and investment plans and TEN-T objectives, will ensure coherence when priorities are set for infrastructure and investment⁷³.**

4.2.2. Investments needs

The EU has long been suffering from low levels of **investment in transport infrastructure**, holding back modernisation of the transport system. Collective and coordinated efforts at European and national levels, in particular through the Connecting Europe Facility, need to reverse this downward trend and boost investments in sustainable transport infrastructure across all modes.

Government investment continues to stay low as a share of GDP in the EU, levelling out at 3.2% in 2022, matching the average over the period 2003-2022⁷⁴. Infrastructure investment has been hit by fiscal consolidation that has been biased against capital expenditure, with prioritisation given to current expenditure such as social transfers. Some of the decline in public investment, including infrastructure, may be due to structural changes in the economy. However, in many countries the quality of existing

⁷³ European Commission. DG MOVE. Provisional agreement on more sustainable and resilient trans-European transport network brings Europe closer together (19 December 2023).

⁷⁴ Eurostat. Investment share of GDP by institutional sectors.

infrastructure has declined despite investments, pointing to outstanding needs. The availability and quality of transport infrastructure is particularly low in the Eastern part of the EU. Renovation and upgrading of an otherwise extensive railway network is also a fairly common challenge there.

The **TEN-T** requires investment in new infrastructure, refurbishment, and modernisation of the existing network. 2024 estimations by the TEN-T Coordinators, taking into consideration the revised TEN-T Regulation, are around EUR 515 billion to complete the core network by 2030⁷⁵.

Better coordination is also needed between EU countries on cross-border infrastructure projects. Building **missing links at borders** between EU countries and along key European routes, removing bottlenecks or interconnecting transport modes in terminals is vital for the Single Market and for connecting Europe with external markets and trade partners. The smooth functioning of the European network requires integration and interconnection of all modes of transport, including equipment for traffic management and innovative technologies.

The Connecting Europe Facility (CEF), Cohesion policy (through the Cohesion Fund and the European Regional Development Fund) and Recovery and Resilience Facility (RRF) intend to address the budgetary deficiencies, especially in the **funding of infrastructure**. They help in constructing the TEN-T core transport network and support infrastructure projects of high economic importance and relevance for the internal market. However, even if EU funding is received, EU countries will still need to develop infrastructure for the last leg of the network which is critical for the

incorporation of large infrastructure projects in local transport systems.

The Regulation establishing the CEF for the period 2021-2027 was adopted in July 2021 with a budget allocated to CEF transport of EUR 25.8 billion. A total of EUR 11.3 billion are earmarked for countries eligible to receive support from the Cohesion Fund. In the transport sector, the programme will promote interconnected and multimodal networks in order to develop and modernise rail, road, inland waterway and maritime infrastructure, as well as ensuring safe and secure mobility. Priority will be given to further development of TEN-T, focusing on missing links and cross-border projects with an EU added value. EUR 1.56 billion of the transport budget will finance major rail projects between cohesion countries and EUR 1.69 billion will be devoted to ensuring that when infrastructure is adapted to improve military mobility within the EU, it is dual-use compatible, meeting both civilian and military needs⁷⁶.

For the programming period 2021-2027, Cohesion policy allocated EUR 59 billion to transport and mobility investments.

The InvestEU Fund support private and public investments in policy areas which represent important priorities for the European Union. A EUR 26.2 billion EU budget guarantee is divided between the four different InvestEU policy, with EUR 9.9 billion dedicated to sustainable infrastructure, including transport infrastructure, EUR 6.6 billion for research, innovation and digitalisation, EUR 6.9 billion for SME's and EUR 2.8 billion for social investment and skills.

Finally, the Recovery and Resilience Facility (RRF) funds, on the basis of national recovery and resilience plans (RRP), investments and reforms to address key challenges identified

⁷⁵ Connecting Europe. A transport funding and financing that is adapted to the challenges ahead. TEN-T Coordinators' Position Paper (April 2024).

⁷⁶ European Commission. Connecting Europe Facility 2021-2027 adopted.

in the European Semester and support the green and digital transition. The RFF will provide up to EUR 337.97 billion in grants and EUR 285.85 billion in loans. Transport-related measures foreseen under national RRP amount to about EUR 100 billion.

The adaptation of infrastructure to **new mobility patterns** and the deployment of infrastructure for renewables and low-carbon fuels poses additional challenges requiring new investments and a different approach to the design of networks and business models. Investment needs for public and private recharging and refuelling (for hydrogen) infrastructure are estimated at EUR 4.1 billion per year over 2021-2030⁷⁷.

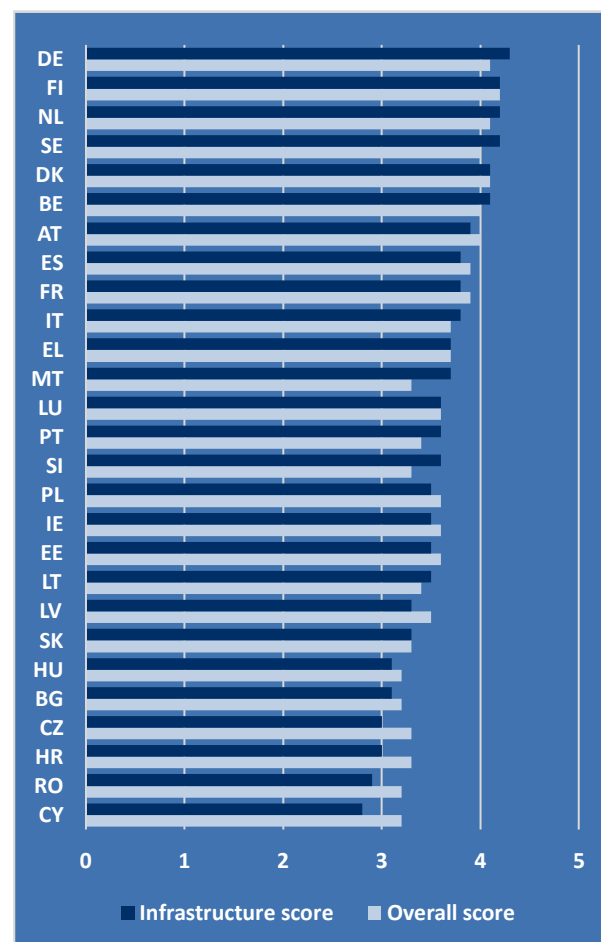
The **Social Climate Fund** (SCF) was created alongside the ETS2 for emissions from fuel combustion in buildings, road transport and additional sectors. It will provide Member States with dedicated funding so that the most affected vulnerable groups, such as households in energy or transport poverty, are directly supported, and not left behind during the green transition.

Member States may use the SCF to support structural measures and investments in energy efficiency and renovation of buildings, clean heating and cooling and integration of renewable energy, as well as in zero- and low-emission mobility solutions.

One component of the World Bank **logistics performance index**⁷⁸ (Figure 37) is the quality of trade and transport-related infrastructure (e.g., ports, railroads, roads, information technology). The index is the lowest for Cyprus and Romania while the best performing European countries in terms of infrastructure are Germany and Finland. It is worth adding that concerning the global

logistics performance index, all the EU countries are ranked in the top 60 out of the 139 countries compared by the World Bank.

Figure 37: Infrastructure quality and overall logistic score (2023)



Source: World Bank The Logistics Performance Index and Its Indicators (2023). The scores demonstrate comparative performance (lowest score to highest score) from 1 to 5.

Yet the **level of investment in transport infrastructure** and maintenance is difficult to compare between EU countries due to non-harmonised and incomplete reporting. Besides, it has to be matched with the actual investment needs. The latest OECD data⁷⁹ indicate that investment levels in most countries remain low. Most EU countries have

⁷⁷ SWD(2023) 68 final. Expressed in 2022 prices.

⁷⁸ World Bank. The Logistics Performance Index and Its Indicators (2023).

⁷⁹ OECD Data. Infrastructure investments (2021 or latest available).

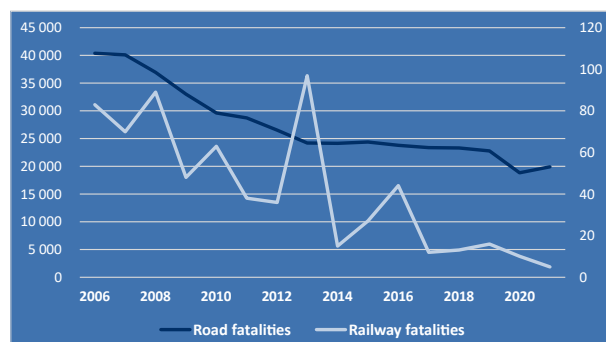
a share of total transport infrastructure investment below 1% of GDP. It is a safe assumption that this does not cover the investment needs (also due to the maintenance requirements) in most countries.

4.3. Safety and security of transport

The safety and security of the transport system is paramount and should never be compromised and the EU should remain a world leader in this field. Continuous efforts with international, national, and local authorities, stakeholders, and citizens is key if we are to meet our goal of zero fatalities from mobility. Europe remains the safest transport region in the world.

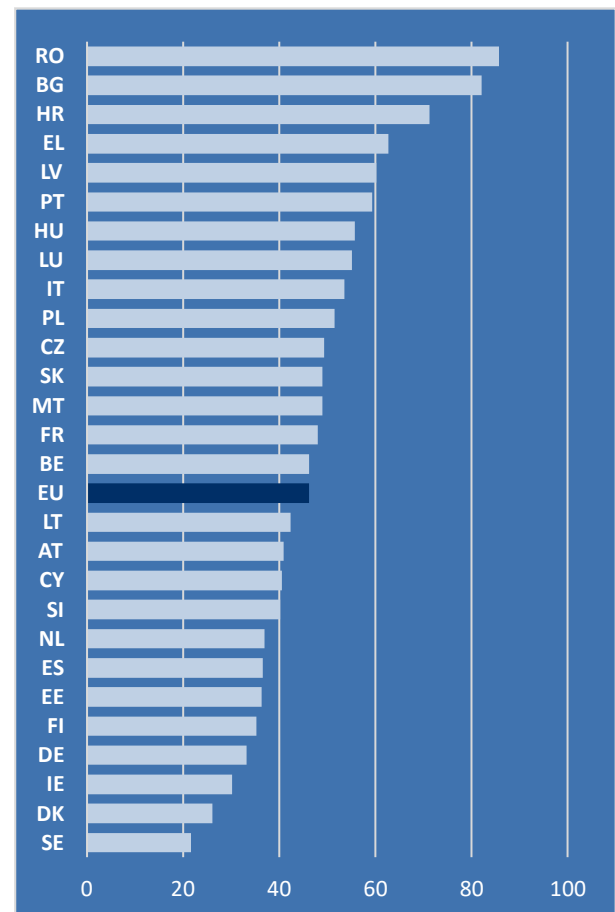
While air, sea and rail travel are very safe, there is no room for complacency, particularly on road safety. Some 20 653 people lost their lives on EU roads in 2022, and for every person killed, around five more suffer serious injuries with life-changing consequences. The Commission therefore remains fully committed to implementing the EU road safety strategy of 2018. All EU countries need to continue their efforts to improve road safety. The poor safety record in Romania, Bulgaria, Latvia, and Croatia calls for more effective measures to be urgently implemented.

Figure 38: Evolution of road and rail fatalities in the EU



Source: European Commission, EU Transport in Figures, Statistical Pocketbook 2023. For rail: number of railway passenger-killed in accidents involving railways.

Figure 39: Road fatalities per million inhabitants (2022)



Source: Eurostat, Person killed in road accidents & Eurostat Population change. Own calculations.

5. Country factsheets

For each country in the European Union, these factsheets aim at introducing a few key pieces of information and background data on relevant indicators regarding transport.

Namely, that information includes an overview of the strategic planning in terms of transport, through the development of the TEN-T networks and decisions linked to transport in the national Recovery and Resilience Plan, the country specific recommendations and the national energy and climate plans.

Then, several indicators are analysed for every EU country: the modal split, the market opening of the railway sector, the road safety, the alternative fuels in road transport and the greenhouse gas emissions from transport.

5.1. Belgium

Strategic aspects for the Transport sector

TEN-T network



Legend:

Airports
 Ports
 Rail-Road terminals
 Inland waterways
 Railways
 Roads

Corridors:
 North Sea - Baltic
 North Sea - White - Mediterranean

Source: TENtec

The **airport** of Brussels ranked 17th in the EU in terms of passengers carried in 2022⁸⁰.

When taking loaded and unloaded tonnes as a reference, Belgium's major **seaport for freight**, Antwerp-Bruges, ranked 2nd in the EU in 2022⁸¹. The ports of Antwerp (2nd in 2021) and Zeebrugge (18th in 2021) merged on 22 April 2022.

⁸⁰ Eurostat. Air passenger transport by main airports in each reporting country (departing, arriving & transit).

⁸¹ Eurostat. Gross weight of goods handled in all ports by direction.

Transport in the Recovery and Resilience Plan for Belgium⁸²

The Belgian Recovery and Resilience Plan consists of **EUR 5 billion** in grants and **EUR 264 million** in loans.

The plan supports the green transition of the transport sector through EUR 1.5 billion investments in sustainable mobility, notably by improving railway infrastructure, financing green public buses, deploying electric charging stations, developing urban public transport, and creating or

refurbishing cycling pathways. A reform will promote electric road transport by limiting preferential tax treatment of company cars to zero-emission vehicles by 2026.

The plan also supports the decarbonisation of the energy sector by promoting the use of hydrogen as an energy source with an investment of EUR 390 million and an accompanying reform that should contribute to making it happen.

Transport in the European Semester for Belgium since 2021

2022: “Reduce overall reliance on fossil fuels by stepping up energy efficiency improvements [...], promoting the use and supply of public transport and accelerating the deployment of renewable energies and related grid infrastructure.”

2023: “Reduce overall reliance on fossil fuels by stepping up energy efficiency improvements [...] and by promoting the use and supply of public transport as well as soft mobility.”

Transport in the national energy and climate plan (final version 2019)⁸³

Greenhouse gas emissions and removals:

- Binding 2050 non-EIS greenhouse gas emission target compared to 2005: **-35%**.
- Indicative 2050 target in the transport sector compared to 2005: **-27%**.

The plan identifies a broad range of measures in this sector, including measures to promote active transport (cycling and walking), tax incentives for clean vehicles and related infrastructure, target dates for the phase-out of conventional fuels, etc. The plan also includes the reductions estimated as a result of some of the individual measures.

Electromobility and the underpinning charging infrastructure is supported by various fiscal measures such as registration taxes, or linked to the greening of company cars, where the federal government has set a target date of 2026. The plan also includes measures to reduce emissions from shipping and rail, and measures to promote the development of alternative fuels for aviation.

Renewable energy:

- Target for renewable energy in gross final consumption of energy by 2030: **17.5%**.
- Expected renewables share in 2050 in the transport sector **23.7%**.

The plan includes a table with the breakdown of the planned aggregated incorporation rates for conventional fuels produced from food and feed crops and advanced biofuels. If the planned biofuels incorporation were not feasible, the plan mentions ‘alternative measures’ without specifying what they are. Furthermore, the amount of electricity expected to be consumed in transport and the split between the amount consumed in road and/or rail is not mentioned.

2050 energy efficiency target:

- Primary energy: **42.7 Mtoe**
- Final energy consumption: **55.2 Mtoe**

The plan provides information on policies and measures beyond 2020 targeting all sectors. Buildings and transport are the most explored.

⁸² European Commission. Analysis of the recovery and resilience plan of Belgium.

⁸³ European Commission. Commission assessment of the final NECP for Belgium.

Facts and figures on Transport in Belgium

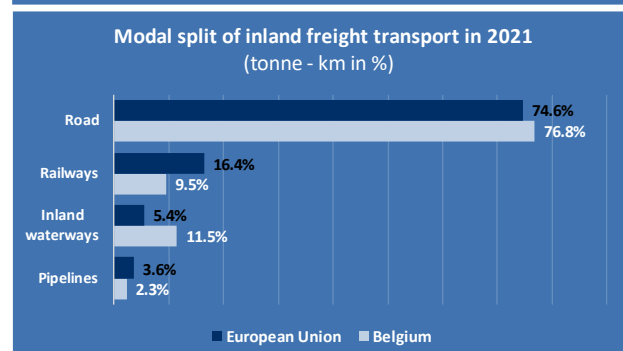
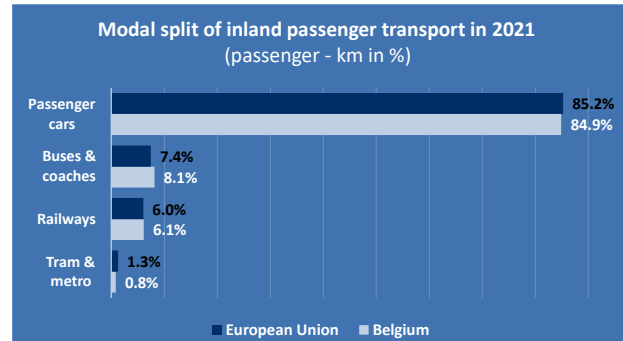
Modal split

The modal split for passenger transport in Belgium corresponds roughly to the EU average. It is to be noted though, that the use of buses and coaches is above the European average.

Freight transport relies predominantly on road, rather than railways. However in Belgium, inland waterways account for an important share of the modal split for freight transport.

Peak-hour delay per road vehicle driver in 2023 was **40.9 hours** (EU-average: 28.6 hours⁸⁴).

In 2021, **87% of the Belgian rail network was electrified** (EU-average: 56%⁸⁵).

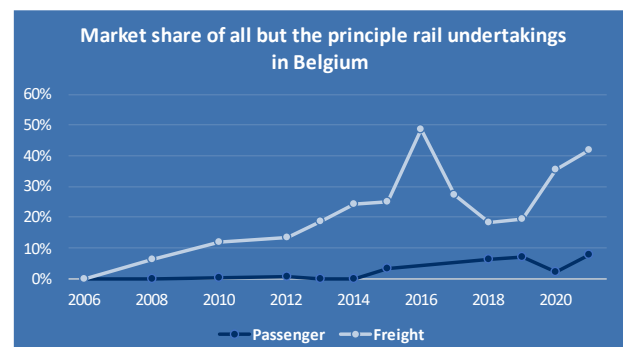


Source: European Commission, EU Transport in Figures Statistical Pocketbook 2023

Market opening in the railway sector

The market opening of the railway sector has made progress since 2012, but the market shares of the competitors to the incumbent freight operators are declining again.

Since a reform in 2014, the infrastructure manager (Infrabel) is separated from the 99% state-owned SNCB/NMBS.



Source: European Commission, EU Transport in Figures Statistical Pocketbook 2023

⁸⁴ European Commission, Joint Research Centre. Calculations based on TomTom data.

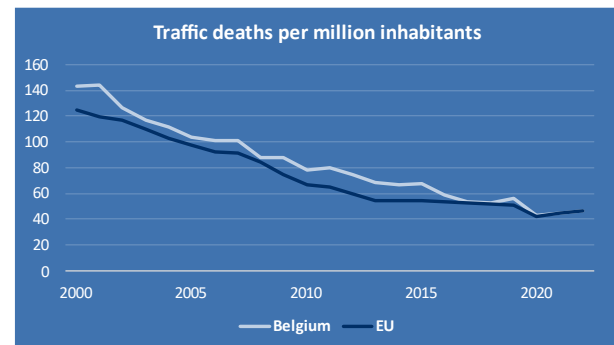
⁸⁵ European Commission, EU Transport in Figures, Statistical Pocketbook 2023.

Road safety

Belgium is 15th out of 27 EU countries in terms of the lowest numbers of fatalities per million inhabitants. Over the past twenty years this rate has decreased faster than EU average.

Compared to the EU average, the distribution of fatalities in Belgium shows a high proportion of cyclist fatalities and fatalities that occur on motorways.

Over the past ten years there has been an increase in the number of fatalities among cyclists whereas the EU average remained constant⁸⁶.

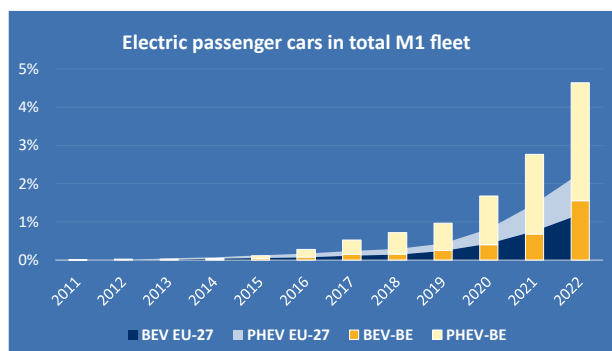


Source: Eurostat, 'Person killed in road accidents' & Eurostat, 'Population change: Over calculations'.

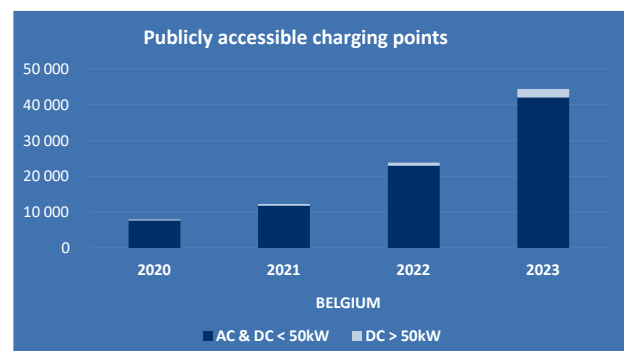
Alternative fuels in road transport

The share of electric passenger cars (M1) in Belgium has been increasing very dynamically over the past six to seven years. The deployment of publicly accessible charging infrastructure is also advancing at steady speed but more focus should be made on fast charging points.

Belgium is on a good track to reach the objectives as defined in the impact assessment for the Commission proposal for an alternative fuels infrastructure regulation⁸⁷.



Source: European Alternative Fuels Observatory. BEV = battery electric vehicle, PHEV = plug-in hybrid electric vehicle

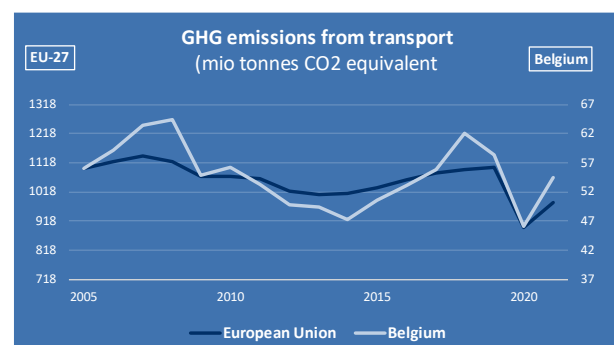


Source: European Alternative Fuels Observatory

Greenhouse gas (GHG) emissions from transport

GHG emissions from the Belgian transport sector were on a more pronounced reduction path than for the EU-27 until 2014 but started increasing again afterwards. After a drop during the pandemic, emissions from the Belgian transport sector are recovering strongly.

In 2021, considering international bunkers, the lion share of Belgian transport GHG emissions came from waterborne transport (48% vs. EU-average of 15%) whereas in most other EU countries road is the principal source.



Source: European Commission, 'EU Transport in Figures Statistical Pocketbook 2023, Including international bunkers'

⁸⁶ European Road Safety Observatory, National Road Safety Profile - Belgium (2023).

⁸⁷ SWD(2021) 631.

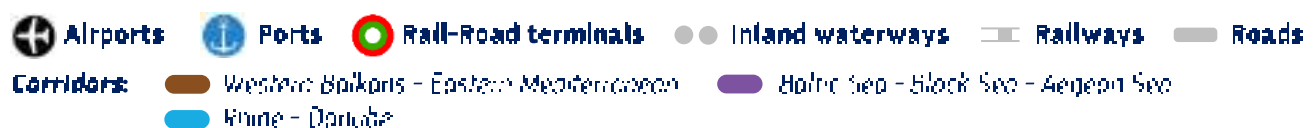
5.2. Bulgaria

Strategic aspects for the Transport sector

TEN-T network



Legend:



Source: TEN-Tec

The **airport** of Sofia ranked 55th in the EU in terms of passengers carried in 2022⁸⁸.

When taking loaded and unloaded tonnes as a reference, Bulgaria's largest **seaport for freight**, Burgas, ranked 58th in the EU in 2021⁸⁹.

⁸⁸ Eurostat. Air passenger transport by main airports in each reporting country (departing, arriving & transit).

⁸⁹ Eurostat. Gross weight of goods handled in all ports by direction.

Transport in the Recovery and Resilience Plan for Bulgaria⁹⁰

The Bulgarian Recovery and Resilience Plan consists of **EUR 6.9 billion**, of which 5.7 billion in grants and 1.2 billion in national resources (no RRF loans). The plan supports the green transition of the transport sector through EUR 666 million investments in decarbonisation measures such as

the introduction new electric rolling stock for suburban and inter-regional rail transport, the construction of a new section of the Sofia metro, a sustainable urban mobility pilot scheme with the purchase of zero-emission public transport vehicles and charging station infrastructure.

Transport in the European Semester for Bulgaria since 2021

2022. Country specific recommendation to “reduce overall reliance on fossil fuels and fossil fuel imports [...]”

2023. Country specific recommendation to “reduce reliance on fossil fuels and accelerate the clean energy transition. Promote [...] sustainable urban transport as well as accelerate development of railway infrastructure.”

Transport in the national energy and climate plan (final version 2019)⁹¹

Greenhouse gas emissions and removals:

- Binding 2050 non-EU GHG emission target compared to 2005: **0%**.
- Indicative 2050 target in the transport sector compared to 2005: **0%**.

Several measures are mentioned that promote decarbonisation, increasing the modal share, increasing the electrification of public transport, raising the share of biofuels in the energy mix. Bulgaria also aims to encourage the manufacture of electric and hybrid cars and to promote demand for such vehicles, as well as to promote research and innovation regarding environment-friendly vehicles. It aims to speed up deployment of charging infrastructure and introduce a tolling system for road transport. Organising awareness-raising campaigns to build up stakeholder capacity regarding sustainable mobility, creating low-emissions zones in big agglomerations, and introducing intelligent transport systems in the national and city transport network are also among the measures foreseen.

Measures contributing to a more efficient organisation of the mobility system (e.g. incentivising multimodality and modal shift, intelligent transport systems, digitalisation, and automation) could have been detailed to improve the overall picture of impact on energy savings and interaction between relevant measures.

Renewable energy:

- Target for renewable energy in gross final consumption of energy by 2050: **27.09%**.
- Expected renewables share in 2050 in the transport sector: **14.2%**.

The plan refers to the existing blending obligation for suppliers of transport liquid fuels and the possibility to change such approach by introducing quotas for each renewable energy supplier, yet without further specifying benefits of such possible policy change. Concerning advanced biofuels, the plan says that the future efforts will focus on applied research and larger-scale demonstration activities. The plan also points to the need to develop public information campaigns to increase consumer awareness. It should be noted, however, that these measures affect consumers only indirectly, as advanced biofuels will be mixed into conventional transport fuels.

2050 energy efficiency target:

- Primary energy: 17.5 Mtoe
- Final energy consumption: 10.3 Mtoe

This level of ambition of contribution is low in comparison with efforts at EU level.

⁹⁰ European Commission. Analysis of the recovery and resilience plan of Bulgaria.

⁹¹ European Commission. Commission assessment of the final NECP for Bulgaria.

Facts and figures on Transport in Bulgaria

Modal split

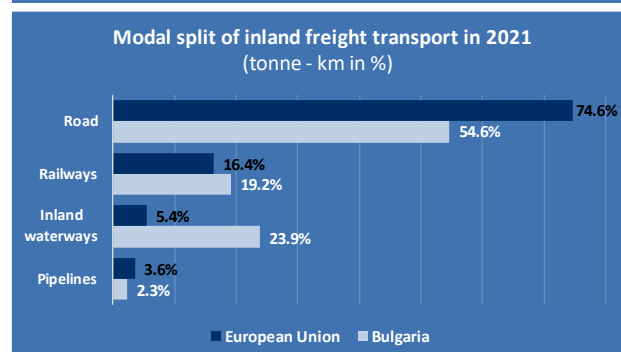
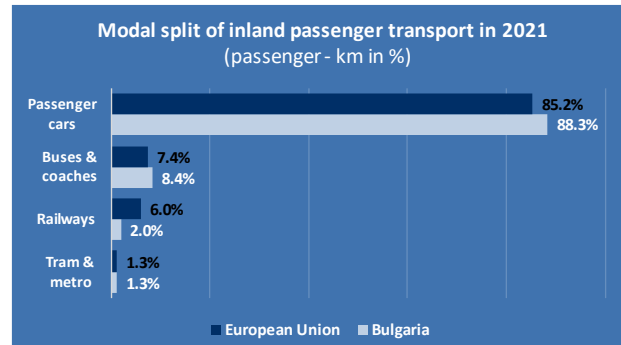
Bulgaria records a high usage of passenger car and in 2021 car trips represented more than 88% of the passenger-kilometres travelled, which is above the EU average.

Bulgaria also has a higher use of buses and coaches than the EU average. On the other hand, figures for Bulgaria shows a much lower use of rail (2% vs 5%).

For land freight transport, road transport holds the largest share with about 55% of all tonne-kilometre driven, which is way under the EU⁹² average of 75%. On the other hand, Bulgaria has a higher use of rail transport. Bulgaria is one of the EU countries with the highest shares of inland waterways in freight transport.

Peak-hour delay per road vehicle driver in 2023 was **37.2 hours** (EU-average: 28.6 hours)⁹³.

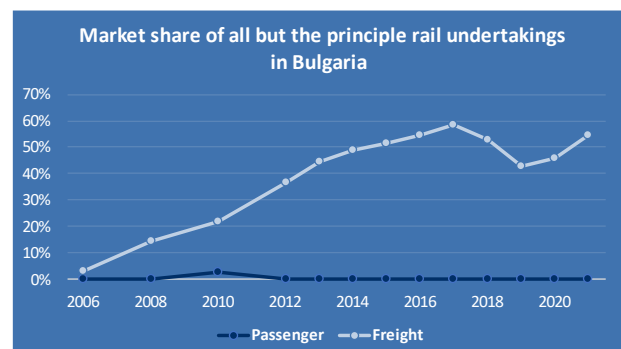
In 2021, **74% of the Bulgarian rail network was electrified** (EU-average: 56%)⁹⁴.



Source: European Commission, EU Transport in Figures Statistical Pocketbook 2023

Market opening in the railway sector

The rail passenger market has been suffering from a lack of effective competition, due to the fact that most (99%) passenger traffic is operated under directly awarded public service contracts. Under Bulgaria's Recovery and Resilience Plan⁹⁴, a new competitively tendered public service contract will be awarded in 2024. In the rail freight segment, the market share of competitors has increased steadily over the past ten years. The arrival of two new players in 2022 brings the total number of rail freight carriers operating in Bulgaria to 18 railway undertakings⁹⁵.



Source: European Commission, EU Transport in Figures Statistical Pocketbook 2023

⁹² European Commission, Joint Research Centre. Calculations based on TomTom data.

⁹³ European Commission, EU Transport in Figures, Statistical Pocketbook 2023.

⁹⁴ Annex to the Council Implementing Decision amending Implementing Decision of 4 May 2022 on the approval of the assessment of the recovery and resilience plan for Bulgaria.

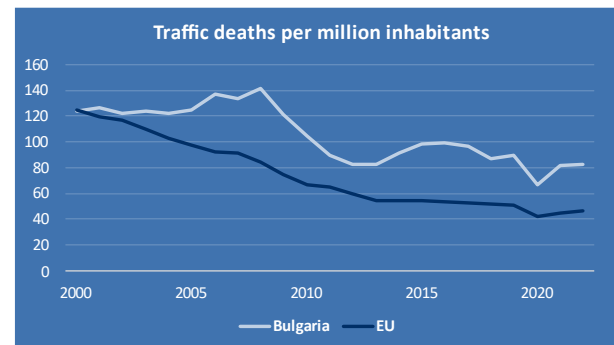
⁹⁵ Annual report of the Railway Administration Executive Agency 2022.

Road safety

Bulgaria is 26th out of 27 EU countries in terms of the lowest numbers of fatalities per million inhabitants. This rate has fallen much more slowly than for the rest of the EU since 2001.

Compared to the EU average, the distribution of fatalities in Bulgaria shows a relatively high proportion of pedestrians.

Reflecting the large increase of motorways in Bulgaria, there has been a strong increase in the number of fatalities and serious injuries on motorways over the past ten years⁹⁶



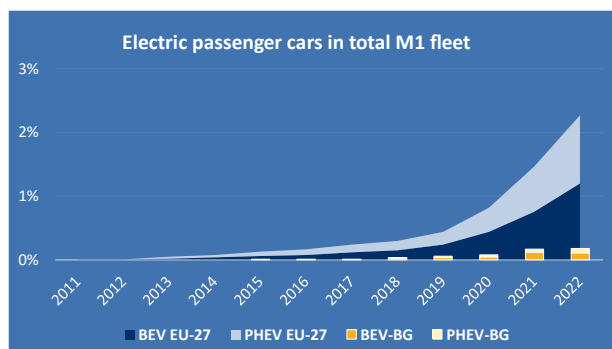
Source: Eurostat 'Person killed in road accidents' & Eurostat 'Population change' Own calculations.

Alternative fuels in road transport

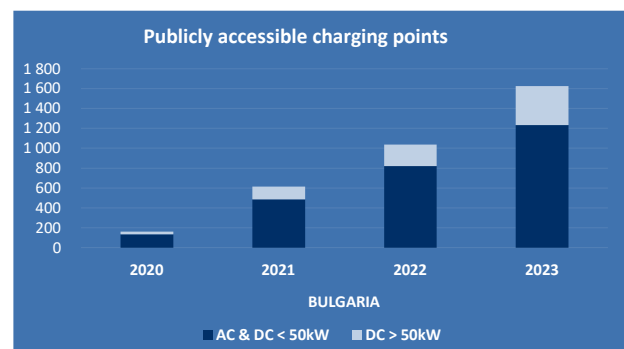
The share of electric passenger cars (M1) in Bulgaria increased slowly over the past six years up to 0.2% in 2022 (EU average: 2.5%).

The deployment of publicly accessible charging infrastructure is advancing at steady speed.

According to EAF-O in 2023, 1 524 recharging points were deployed and in 2022, 6 300 electric vehicles were registered. Bulgaria still needs much effort to reach the objectives as defined in the impact assessment for the Commission proposal for an alternative fuels infrastructure regulation⁹⁷.



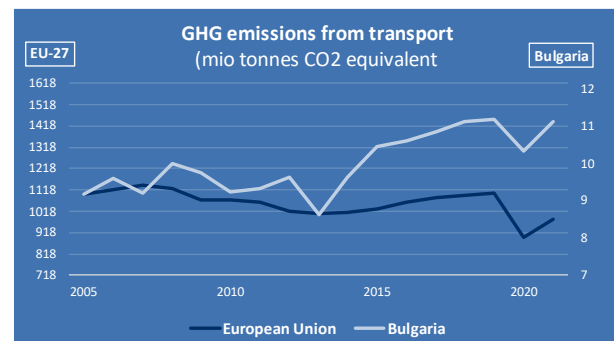
Source: European Alternative Fuels Observatory. BEV = battery electric vehicle, PHEV = plug-in hybrid electric vehicle



Source: European Alternative Fuels Observatory

Greenhouse gas (GHG) emissions from transport

GHG emissions from the Bulgarian transport sector has been slowly increasing over the past 15 years, departing from the general EU trend. In 2021, most of those transport GHG emissions came from road transport (91%), above EU-average (76%).



Source: European Commission 'EU Transport in Figures Statistical Pocketbook 2023' including international bunkers

⁹⁶ European Road Safety Observatory. National Road Safety Profile – Bulgaria (2023).

⁹⁷ SWD(2021) 631.

5.3. Czechia

Strategic aspects for the Transport sector

TEN-T network



Legend:

Airports
 Ports
 Rail-Road terminals
 Inland waterways
 Railways
 Roads
Corridors:
 Baltic Sea-Adriatic Sea
 Rhine-Danube

Source: TENtec

The **airport** of Prague ranked 32nd in the EU in terms of passengers carried in 2022⁹⁸.

As a landlocked country, Czechia only relies on river ports for waterborne transport.

⁹⁸ Eurostat. Air passenger transport by main airports in each reporting country (departing, arriving & transit).

Transport in the Recovery and Resilience Plan for Czechia⁹⁹

The Czechian Recovery and Resilience Plan consists of **EUR 9.2 billion** in grants (+ EUR 8.4 million in loans). The plan supports the green transition of the transport sector through EUR 1.2

billion investments in sustainable mobility: low-emission vehicles for the public and business sector, improving railway infrastructure and promoting electric charging stations and cycling pathways.

Transport in the European Semester for Czechia since 2021

2022: Country-specific recommendation to 'reduce overall reliance on fossil fuels [...]'

2023: Country-specific recommendation to 'reduce reliance on fossil fuels [...]. Promote the

uptake of zero-emission vehicles and boost the availability of high-capacity charging and refuelling infrastructure through new reforms to create enabling conditions and remove existing barriers to the deployment of vehicles and infrastructure [...]'

Transport in the national energy and climate plan (final version 2019)¹⁰⁰

Greenhouse gas emissions and removals:

- Binding 2030 non-EIS greenhouse gas emission target compared to 2005: -14%.
- No indicative target in the transport sector.

There is an action plan for clean mobility, which supports alternative fuel infrastructure, clean mobility in public transport (including electric buses) and for freight, and low-emission zones. Measures to support alternative fuels are described. Electromobility and the underpinning charging infrastructure are supported by the national action plan for clean mobility. Yet, with only 16.9% renewable electricity share planned for 2030, only a limited percentage of the electricity use in transport can be counted as renewable.

Further policies and measures include the strategic sustainable urban mobility plan, the freight transport strategy and accompanying measures. Measures to promote the modal shift and intelligent transport systems are mentioned.

Renewable energy:

- Target for renewable energy in gross final consumption of energy by 2030: 22%
- Expected renewables share in 2030 in the transport sector: **14%**.

Fiscal measures would support the blending of biofuels with petrol or diesel. Czechia will continue to meet the fuel supplier obligation. First-generation biofuels will be capped at 7% in final energy consumption. The share of advanced biofuels is expected to increase significantly from the existing zero to 40% of the transport target by 2030. However, although an increase is projected in the number of e-vehicles, no financial incentives are detailed that could help promote such a rise.

The policies and measures discussed appear to rely too much on bioenergy, neglecting electrification of the transport sector.

Contribution to EU's 2030 energy efficiency target:

- Primary energy: 41.4 Mtoe
- Final energy consumption: 23.7 Mtoe

The plan provides information on policies and measures targeting mainly buildings, industry, transport and the public sector. These policies and measures are considered broadly credible, but insufficient to meet the target. However, the plan promises further policy measures in the future.

Energy savings in transport should come from the increased use of public transport and of rail freight instead of road freight. Consideration is also given to setting up low emissions zones.

⁹⁹ European Commission. Analysis of the recovery and resilience plan of Czechia.

¹⁰⁰ European Commission. Commission assessment of the final NECP for Czechia.

Facts and figures on Transport in Czechia

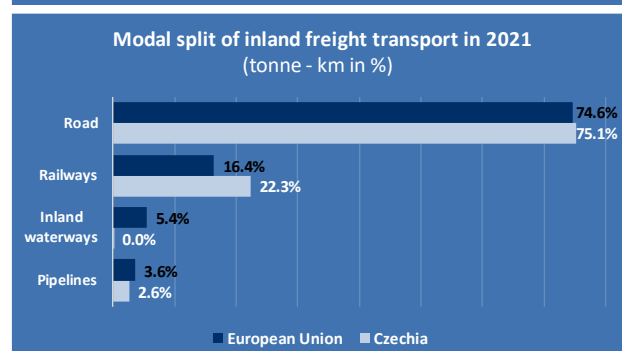
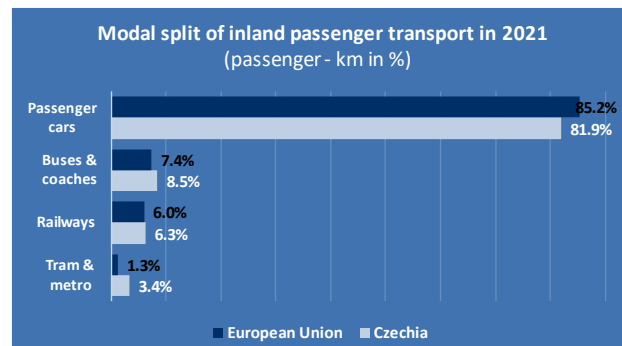
Modal split

Czechia records a lower use of passenger cars than the EU-average (81.9% against 85.2% in 2021) and a higher use of buses and coaches. Regarding rail passenger transport, the modal share is slightly higher than the EU average as well.

For land freight transport, road transport holds the largest share of freight transport activity – more than 75% of all tonne-kilometres driven. In addition, Czechia has a higher share of rail transport than the EU average. Usage of inland waterways is minimal.

Peak-hour delay per road vehicle driver in 2023 was **23.2 hours** (EU-average: 28.6 hours)¹⁰¹.

In 2021, **34% of the Czech rail network was electrified** (EU-average: 56%)¹⁰².



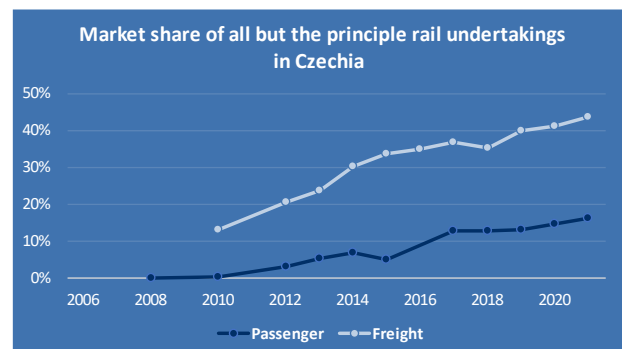
Source: European Commission, EU Transport in Figures Statistical Pocketbook 2023.

Market opening in the railway sector

Market opening in rail transport has made progress in both passenger and freight transport since 2012.

The rail freight market has opened for competition and the market share for all but the incumbent rail undertakings has more than doubled since 2012 (43.5% in 2021).

In rail passenger transport, the Czech authorities are gradually introducing competitive tendering procedures of rail public service obligations.



Source: European Commission, EU Transport in Figures Statistical Pocketbook 2023.

¹⁰¹ European Commission, Joint Research Centre. Calculations based on TomTom data.

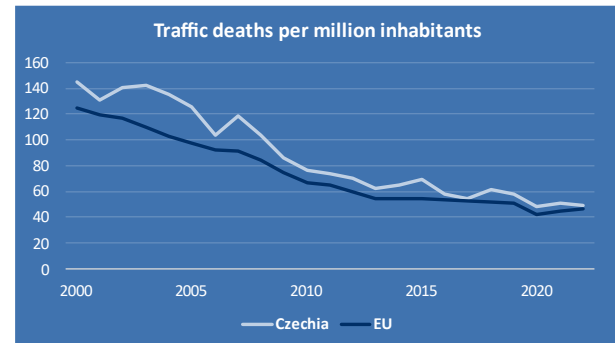
¹⁰² European Commission, EU Transport in Figures. Statistical Pocketbook 2023.

Road safety

Czechia has a slightly higher fatality rate than the EU average although the number of fatalities fell by 35% over the last decade and again by an encouraging 15% between the pre-pandemic year 2019 and 2022.

They have adopted a new national road safety strategy 2021-2030 and a specific action plan for speed 2021-2022.

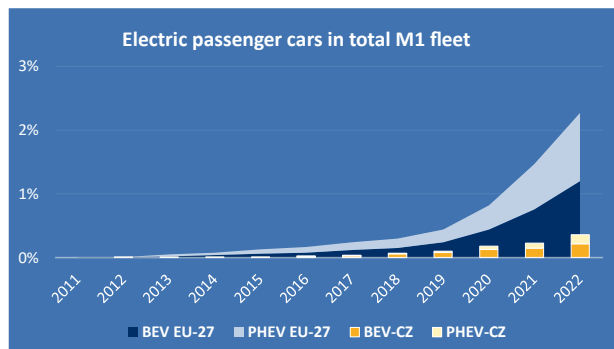
As part of the EU Road Safety Exchange, Czechia is partnering with Germany and France on the topics of speed management and safe road infrastructure in 2023.



Source: Eurostat: Person killed in road accidents & Eurostat: Population change. Own calculations.

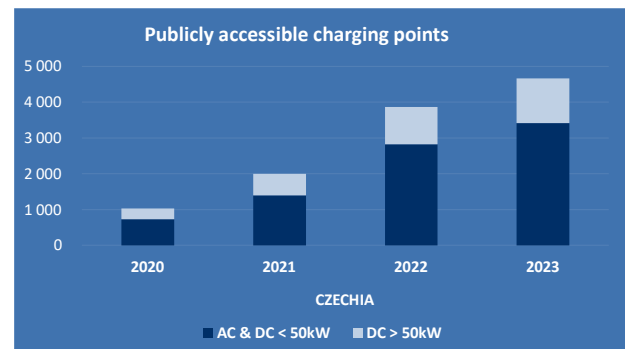
Alternative fuels in road transport

The share of electric passenger cars (M1) in Czechia has been increasing slowly over the past six years and stays under 0.4% (2.5% EU average).



Source: European Alternative Fuels Observatory. BEV = battery electric vehicle, PHEV = plug-in hybrid electric vehicle

The deployment of publicly accessible charging infrastructure has remained slow since 2020, but an acceleration is noted for 2023. End 2022, there were **5 electric vehicles per charging point** (EU average: 10).

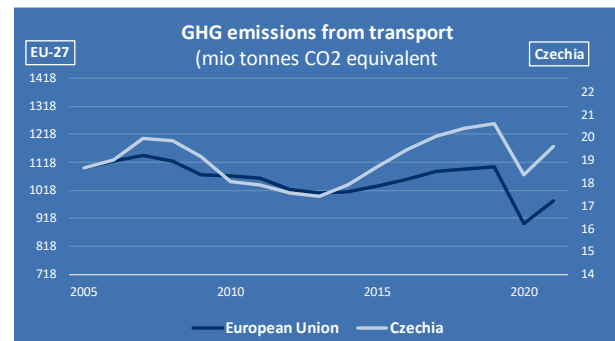


Source: European Alternative Fuels Observatory

Greenhouse gas (GHG) emissions from transport

After several years of reductions, GHG emissions from the Czech transport sector have started to grow again since 2013, even if a decline was noted during the pandemic.

In 2021, most of those transport GHG emissions came from road transport (96.5%), above EU-average (76%).



Source: European Commission: EU Transport in Figures Statistical Pocketbook 2023 including international bunkers

5.4. Denmark

Strategic aspects for the Transport sector

TEN-T network



Legend:

Airports
 Ports
 Rail-Road terminals
 Inland waterways
 Railways
 Roads

Corridor: Scandinavian – Mediterranean

Source: TENtec

The **airport** of Copenhagen ranked 14th in the EU in terms of passengers carried in 2022¹⁰³.

When taking loaded and unloaded tonnes as a reference, Denmark's largest **seaport for freight**, Århus, ranked 7th in the EU in 2021¹⁰⁴.

¹⁰³ Eurostat. Air passenger transport by main airports in each reporting country (departing, arriving & transit).

¹⁰⁴ Eurostat. Gross weight of goods handled in all ports by direction.

Transport in the Recovery and Resilience Plan for Denmark¹⁰⁵

The Danish Recovery and Resilience Plan consists of **EUR 1.63 billion** in RRF loans. In the plan, EUR 259 million are allocated to sustainable road transport, and 407 million for a green tax reform.

The two largest single green measures in the plan supporting the green transition of the transport sector are the investment window (EUR 153 million) of the green tax reform and the reprioritisation of the registration tax of vehicles

and the low electricity tax on charging vehicles (EUR 141million) in the sustainable transport component.

A EUR 27 million subsidy for green ferries is also made, aiming to reduce the emissions caused by domestic ferries in Denmark. Ferries are essential for the cohesion of the country.

Transport in the European Semester for Denmark since 2021

2022. Country-specific recommendation to 'reduce overall reliance on fossil fuels, further diversify energy supply and help decarbonise the economy by accelerating the deployment of renewables [...] and improving energy efficiency'.

2023. Country-specific recommendation to 'reduce reliance on fossil fuels and increase the share of renewables in the energy supply. [...]'

Transport in the national energy and climate plan (final version 2019)¹⁰⁶

Greenhouse gas emissions and removals:

- Binding 2030 non-EU greenhouse gas emission target compared to 2005: -39%.
- No indicative target in the transport sector.

Denmark plans to decide on additional policies and measures to meet the objectives after submitting its NECP. As a result, the NECP does not specify Denmark's strategy for reaching its 2030 non-EU target, but it refers to certain objectives and planned initiatives.

For transport, a key objective is to stop sales of new cars running exclusively on petrol or diesel with traditional internal combustion engines (i.e. non-hybrid or non-electric cars) by 2030. The government will also negotiate a new infrastructure agreement. According to Denmark's NECP, this agreement will also consider climate and environmental issues, including investments in public transport and cycling, to a much larger degree than the present infrastructure plan. Denmark has also planned a major electrification of transport.

Renewable energy:

- Target for renewable energy in gross final consumption of energy by 2030: 55%.
- Expected renewables share in 2030 in the transport sector: **19%**.

Denmark has not set any targets or objectives for sectoral shares of renewable energy, technologies used, or efficiency demand. Yet, the modelling presented in Denmark's plan indicates the expected contributions from the various sectors.

Contribution to EU's 2030 energy efficiency target:

- Primary energy: 18.3 Mtoe
- Final energy consumption: 15.8 Mtoe

The plan provides descriptive information on policies and measures beyond 2020 targeting a variety of sectors, mainly industry and buildings.

¹⁰⁵ European Commission. Analysis of the recovery and resilience plan of Denmark.

¹⁰⁶ European Commission. Commission assessment of the final NECP for Denmark.

Facts and figures on Transport in Denmark

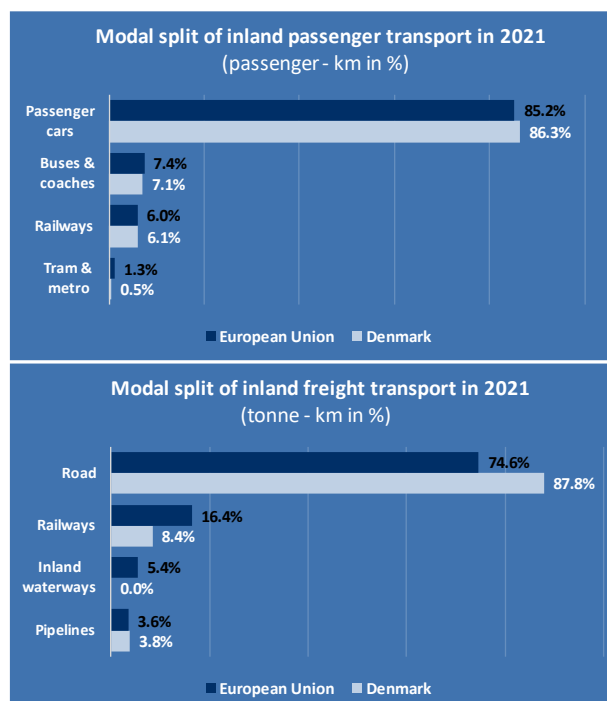
Modal split

The modal split for passenger transport is close to the EU average, although the share of tram and metro transport is below the EU average.

Freight transport in Denmark relies to a larger extent on road transport than the EU average. Correspondingly, the share of railways is lower. Inland waterways do not play any role for freight transport in Denmark.

Peak-hour delay per road vehicle driver in 2023 was **26.3 hours** (EU-average: 28.6 hours)¹⁰⁷.

In 2021, **32% of the Danish rail network was electrified** (EU-average: 56%)¹⁰⁸.



Source: European Commission, EU Transport in Figures Statistical Pocketbook 2023

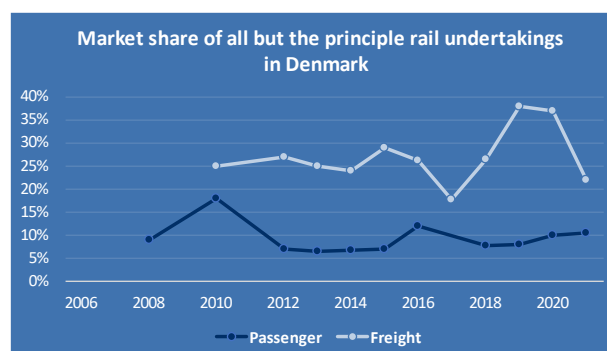
Market opening in the railway sector

State-owned infrastructure manager *Banedanmark* oversees most of the network, except for some 500 km of lines controlled by private companies.

In the rail freight market, a number of publicly and privately owned railway undertakings compete, especially on the corridor Sweden – Denmark – Germany. The rail passenger transport market is operated entirely under public service contracts, except for seasonal commercial night train services which run between Sweden and Germany and between Sweden and Austria with stops in Denmark.

The Danish infrastructure manager is independent in legal, organisational, and decision-making terms from the railway undertakings. It is organised as a government agency under the tight control of the Ministry of Transport which also exercises control over the incumbent railway undertaking. Or

questions concerning track access charges Denmark tries to restrict the management autonomy of the infrastructure manager to a minimum.



Source: European Commission, EU Transport in Figures Statistical Pocketbook 2023

¹⁰⁷ European Commission, Joint Research Centre. Calculations based on TomTom data.

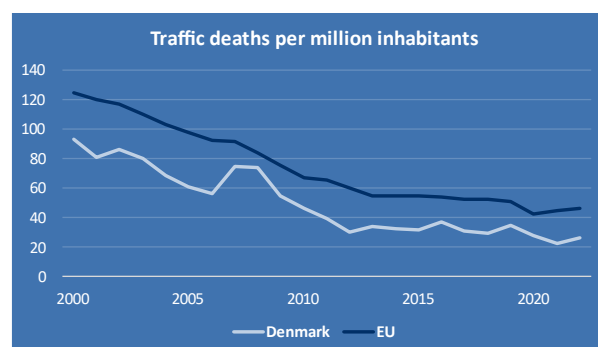
¹⁰⁸ European Commission, EU Transport in Figures. Statistical Pocketbook 2023.

Road safety

Denmark is 2nd out of 27 EU countries in terms of the lowest numbers of fatalities per million inhabitants. Over the past 20 years this rate has decreased at the same pace as the EU average.

Compared to the EU average, the distribution of fatalities in Denmark shows a relatively high proportion of cyclists (19% against 9%) and fatalities that occur on wet roads.

Over the past ten years the total number of cyclist fatalities increased while their number remained stable in the European Union¹⁰⁹.



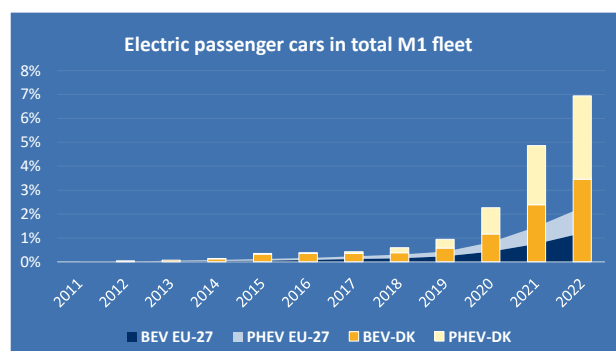
Source: Eurostat 'Person killed in road accidents' & Eurostat 'Population change' Over calculations.

Alternative fuels in road transport

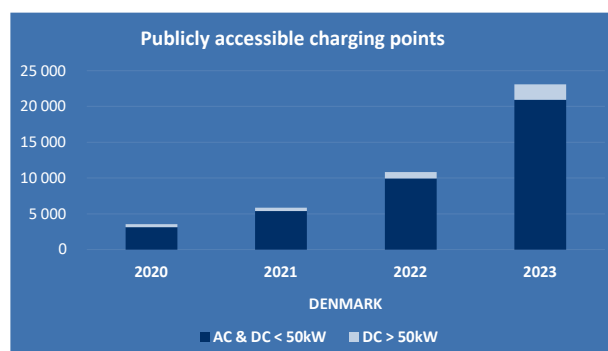
The share of electric passenger cars in total M1 fleet is on a steady rise, faster than EU average.

The deployment of publicly accessible charging infrastructure is advancing at steady speed since 2020, but fast charging points are still rare.

According to EAFIO in 2023, 25 071 recharging points were deployed and in 2022, 195 766 electric vehicles were registered. Denmark is on a very good track to reach the objectives as defined in the impact assessment for the Commission proposal for an alternative fuels infrastructure regulation¹¹⁰.



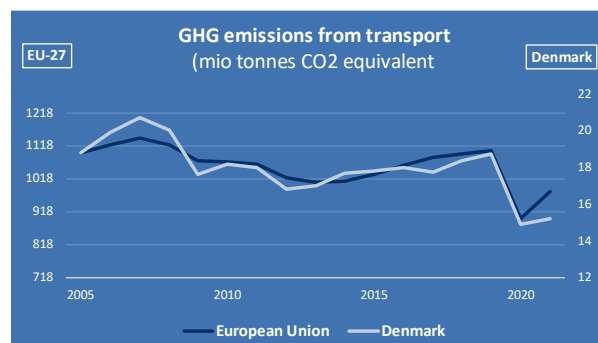
Source: European Alternative Fuels Observatory. BEV = battery electric vehicle, PHEV = plug-in hybrid electric vehicle



Source: European Alternative Fuels Observatory

Greenhouse gas (GHG) emissions from transport

GHG emissions from the Denmark transport sector has been following the overall EU trend over the past 15 years.



Source: European Commission 'EU Transport in Figures Statistical Pocketbook 2023' including international bunkers

¹⁰⁹ European Road Safety Observatory. National Road Safety Profile – Denmark (2023).

¹¹⁰ SWD(2021) 631.

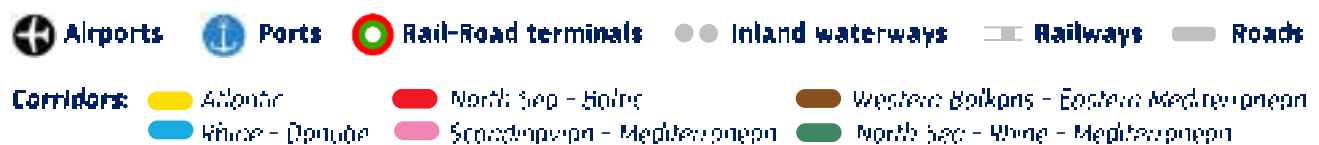
5.5. Germany

Strategic aspects for the Transport sector

TEN-T network



Legend:



Source: TENtec

Germany has four **airports** ranking amongst the 20 busiest in the EU in terms of passengers carried in 2022, namely Frankfurt (4th), Munich (7th), Berlin (16th) and Düsseldorf (20th)¹¹¹.

Germany has two major **seaports for freight** in the EU when taking loaded and unloaded tonnes as a reference: Hamburg (5th in 2021) and Bremerhaven (14th in 2021)¹¹².

¹¹¹ Eurostat. Air passenger transport by main airports in each reporting country (departing, arriving & transit).

¹¹² Eurostat. Gross weight of goods handled in all ports by direction.

Transport in the Recovery and Resilience Plan for Germany¹¹³

The German Recovery and Resilience Plan consists of **EUR 27.8 billion** of which 26.4 billion in grants and 1.4 billion in national resources (no RRF loans).

The plan supports the green transition of the transport sector through EUR 5.4 billion investments in climate-friendly mobility. Namely, those investments will support electric cars, clean buses and rail and provide financial support for the

purchase of more than 550 000 zero- or low-emission vehicles.

The plan also includes EUR 3.5 billion devoted to decarbonising the economy, especially the industry. Half of these investments (EUR 1.5 billion) will be dedicated to developing the renewable hydrogen value chain (including production, infrastructure, and use).

Transport in the European Semester for Germany since 2021

2022: Country-specific recommendation to “reduce overall reliance on fossil fuels [...] by improving energy efficiency, incentivising energy savings, [...], boosting investments in and accelerating the deployment of electricity networks and renewable energy [...]”.

2023: Country-specific recommendation to “increase efforts to further reduce the overall reliance on fossil fuels by boosting investment in and accelerating the deployment of renewable energy [...]. Step up energy efficiency efforts in transport, building and industry [...]”.

Transport in the national energy and climate plan (final version 2019)¹¹⁴

Greenhouse gas (GHG) emissions and removals:

- Binding 2030 non-EIS greenhouse gas emission target compared to 2005: **-35%**.
- Indicative 2030 target in the transport sector compared to 2021: **-22%**.

The plan identifies a broad range of measures in this sector, e.g. regulatory, fiscal, and financial support measures, to stimulate demand for alternative fuel vehicles and infrastructure in road transport, investment in the rail network and measures such as aviation taxation. However, not much detail is provided on modal shift. Road transport continues to generate 96% of transport external costs.

Electromobility and charging infrastructure is supported by the higher CO₂ price and various regulatory, fiscal and financial support measures with the aim to have 7-10 million electric vehicles on the road and up to 1 million publicly accessible recharging points by 2030. A third of road freight would be powered by electricity or other zero- or carbon-neutral fuel.

Renewable energy

- Target for renewable energy in gross final consumption of energy by 2030: **30%**.
- Expected renewables share in 2030 in the transport sector **27%**¹¹⁵.

First generation biofuels are set to rise to 5.5% and advanced biofuels to 3.5% in 2030. The key policies and measures set out in the plan are an increase in the GHG savings obligation as regards fuel content, higher prices for CO₂, and the rollout of charging and refuelling infrastructure. The federal government also plans to support the production of advanced biofuels and renewable fuels of non-biological origin. These policies and measures are considered sufficient to achieve the target set for renewables in the transport sector.

Contribution to EU's 2030 energy efficiency target:

- Primary energy: 216 Mtoe
- Final energy consumption: 185 Mtoe

The plan provides information on policies and measures beyond 2020, targeting all main sectors (including transport). These policies and measures appear insufficient to achieve the target.

¹¹³ European Commission. Analysis of the recovery and resilience plan of Germany.

¹¹⁴ European Commission. Commission assessment of the final NECP for Germany.

¹¹⁵ Including multipliers set out by the recast Renewable Energy Directive.

Facts and figures on transport in Germany

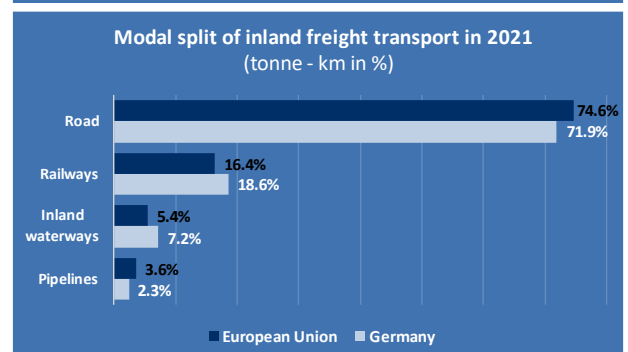
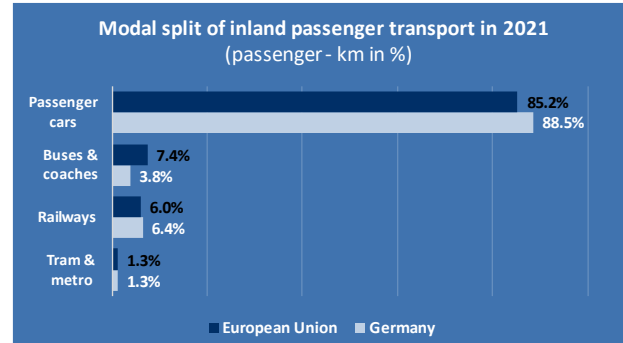
Modal split

Germany records a high use of passenger cars and in 2021 car trips represented more than 88% of the passenger-kilometres travelled, above the EU average. On the other hand, Germany records a lower use of buses and coaches than EU average, while rail passenger transport is slightly higher.

For land freight transport, road transport covers the largest share of freight transport activity, about 72% of all tonne-kilometres driven. In addition, Germany has a higher share of rail and inland waterway transport than the EU average. Over time, the road freight sector's modal share in Germany has grown in relation to both rail and inland waterways freight transport.

Peak-hour delay per road vehicle driver in 2023 was **28.3 hours** (EU-average: 28.6 hours).¹¹⁶

In 2021, **53% of the German rail network was electrified** (EU-average: 56%).¹¹⁷

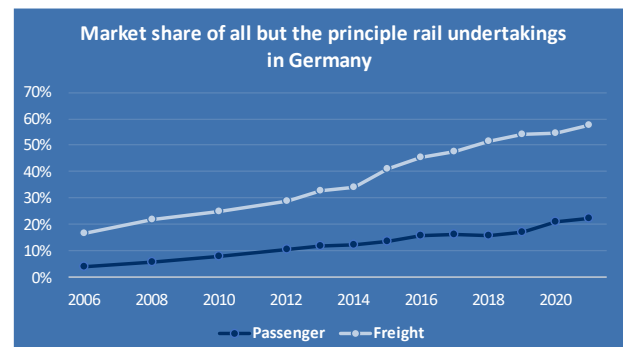


Source: European Commission, EU Transport in Figures Statistical Pocketbook 2023

Market opening in the railway sector

A total of 346 railway undertakings operated in the railway transport market in 2021. The majority of market participants were concentrated in the rail freight transport and the regional and local passenger transport markets, whereas the number of competing undertakings in the long-distance passenger transport segment remained relatively small. Market shares of the incumbent DB still show monopolistic structures for passenger transport: 36% in long distance passenger transport, 55% in regional and local passenger transport (while the share is only 42% in freight traffic).¹¹⁸

The development of long-distance coach traffic shows the market opportunities for alternatives to the incumbent in long distance rail services.



Source: European Commission, EU Transport in Figures Statistical Pocketbook 2023

¹¹⁶ European Commission, Joint Research Centre. Calculations based on TomTom data.

¹¹⁷ European Commission, EU Transport in Figures, Statistical Pocketbook 2023.

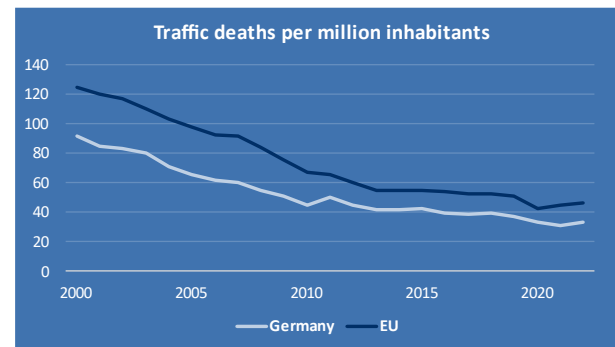
¹¹⁸ Bundesnetzagentur, Report: Railway Market Analysis Germany 2022.

Road safety

Germany is 4th out of 27 EU countries in terms of the lowest numbers of fatalities per million inhabitants. Over the past 20 years this rate has decreased at the same pace as the EU average.

Compared to the EU average, the distribution of fatalities in Germany shows a higher proportion of cyclists and fatalities aged 75 and older.

Over the past ten years the total number of cyclist fatalities increased while their number remained stable in the European Union¹¹⁹.



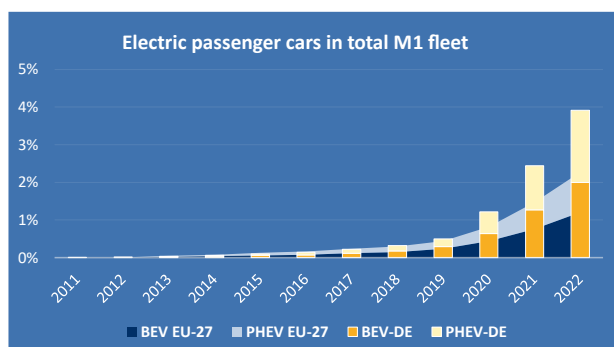
Source: Eurostat 'Person killed in road accidents' & Eurostat 'Population change' Own calculations.

Alternative fuels in road transport

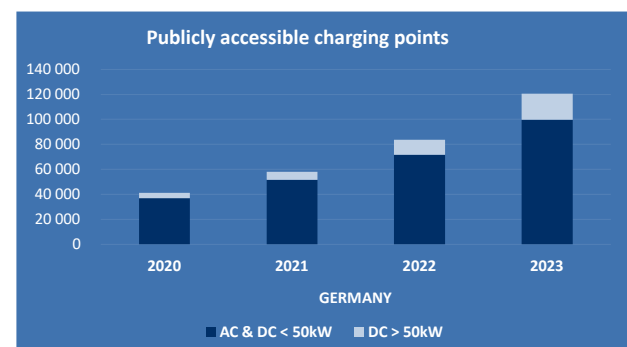
The share of electric passenger cars (M1) in Germany has been increasing dynamically over the past five years with an average annual growth rate of more than 80%. The deployment of publicly accessible charging infrastructure is also advancing at steady speed, with a sharp increase in the last year of fast recharging points.

According to EAFC in 2023, more than 120 000 recharging points were deployed and, in 2022, almost 2 million electric vehicles were registered, of which more than a million were battery electric. In Germany, the growth rates of both infrastructure and electric vehicles are satisfactory. However, such growth rates must continue if Germany was to achieve the objectives as defined in the impact assessment for the Commission proposal for an alternative fuels infrastructure regulation¹²⁰.

In 2022, Germany had 109 hydrogen refueling stations.



Source: European Alternative Fuels Observatory. BEV = battery electric vehicle, PHEV = plug-in hybrid electric vehicle



Source: European Alternative Fuels Observatory

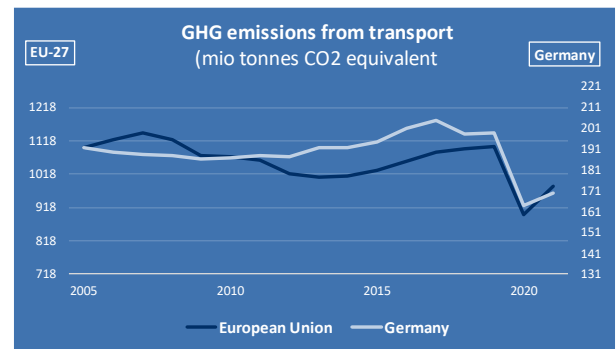
¹¹⁹ European Road Safety Observatory. National Road Safety Profile – Germany (2023).

¹²⁰ SWD(2021) 631.

Greenhouse gas (GHG) emissions from transport

GHG emissions from the German transport sector increased overall slowly until 2017 and then decreased afterwards.

In 2021, GHG emissions from the German transport sector came proportionately less from maritime transport than the EU-average (3.1% against 14.8% including international bunkers).



Source: European Commission: EU Transport in Figures Statistical Pocketbook 2023, including international bunkers

5.6. Estonia

Strategic aspects for the Transport sector

TEN-T network



Legend:

Airports
 Ports
 Rail-Road terminals
 Inland waterways
 Railways
 Roads

Corridors: North Sea – Baltic

Source: TENtec

The **airport** of Tallinn ranked 93rd in the EU in terms of passengers carried in 2022¹²¹.

When taking loaded and unloaded tonnes as a reference, Estonia's largest **seaport for freight**, Tallinn, ranked 38th in the EU in 2021¹²².

¹²¹ Eurostat. Air passenger transport by main airports in each reporting country (departing, arriving & transit).

¹²² Eurostat. Gross weight of goods handled in all ports by direction.

Transport in the Recovery and Resilience Plan for Estonia¹²³

The Estonian Recovery and Resilience Plan consists of **EUR 953 million** in grants (no loans).

The plan supports the green transition of the transport sector through EUR 30.6 million investments in sustainable transport. The aim is to develop greener transport modes, mainly with a focus on rail and maritime transport.

The construction of five Rail Baltic viaducts (EUR 31 million) will contribute to the development of a

new electrified railway connection while a new low-emission multifunctional vessel will among other uses, contribute to the protection of biodiversity.

A target is also to connect Rail Baltic to sea connections with the Nordic Countries via the construction of the Tallinn Old Port tram line (EUR 36.5 million).

Transport in the European Semester for Estonia since 2021

2022: Country-specific recommendation to "reduce overall reliance on fossil fuels [...] by accelerating the deployment of renewables [...]. Intensify efforts to improve the sustainability of the transport system including through electrification of the rail network and by increasing incentives to encourage sustainable and less polluting transport, including the renewal of the road vehicle stock."

2023: Country-specific recommendation to "reduce overall reliance on fossil fuels, accelerate the deployment of renewable energy sources [...]. Continue efforts to increase the share of sustainable transport by electrifying the rail network and through taxation that incentivises the gradual renewal of the vehicle stock towards zero- or low-emission vehicles. [...]"

Transport in the national energy and climate plan (final version 2019)¹²⁴

Greenhouse gas emissions and removals:

- Binding 2030 non-EIS greenhouse gas emission target compared to 2005: **-15%**.
- Indicative 2030 target in the transport sector compared to 2005: **-30%**.

The final plan identifies several measures, including e.g., increasing the share of biofuels in the transport sector and time-based road charge for heavy duty vehicles. The estimated reductions from the individual measures are not specified.

Estonia intends to support electromobility and the underpinning charging infrastructure by yet to be confirmed measures such as support for purchase of electric vehicles and electrification of ferries, public transport, and railways.

Renewable energy:

- Target for renewable energy in gross final consumption of energy by 2030: **42%**.
- Expected renewables share in 2030 in the transport sector: **14%**.

Estonia aims to meet the 14% target by 55% 'second generation' biofuels and 65% electricity with the applicable multipliers in line with the Renewable Energy Directive. Estonia does not provide clarifications on what is understood by first- and second-generation biofuels, as these terms are not used in the Directive.

Contribution to EU's 2030 energy efficiency target:

- Primary energy: **5.4 Mtoe**
- Final energy consumption: **2.9 Mtoe**

Estonia has the second highest energy intensity of economy (after Finland) in the EU.

The plan provides descriptive information on policies and measures beyond 2020 targeting transport, buildings, "thermal transmission" (district heating), "public sector" and "other" sectors. The energy savings contribution of these measures towards the 2030 target is not reported.

¹²³ European Commission. Analysis of the recovery and resilience plan of Estonia.

¹²⁴ European Commission. Commission assessment of the final NECP for Estonia.

Facts and figures on transport in Estonia

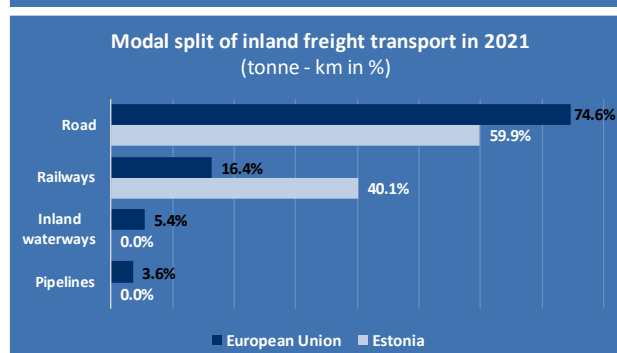
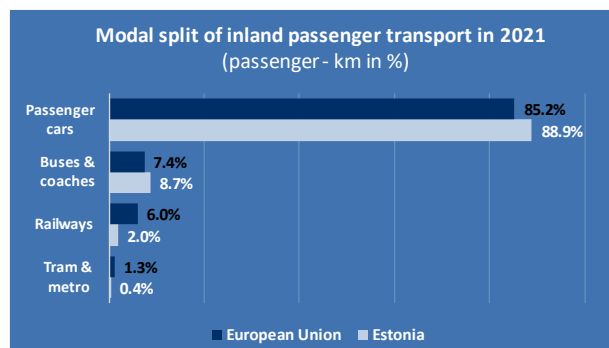
Modal split

The introduction of free public transport in 2015 in the capital Tallinn where one third of the population lives, has increased the use of public transport. In general buses and coaches remain the main form of public transport with 9% share of total passenger transport.

The modal split in freight land transport is characterised by a large share of railways (40% compared to a 16.4% EU average).

Peak-hour delay per road vehicle driver in 2023 was **17.3 hours** (EU-average: 28.6 hours)¹²⁵.

In 2021, **19% of the Estonian rail network was electrified** (EU-average: 56%)¹²⁶.

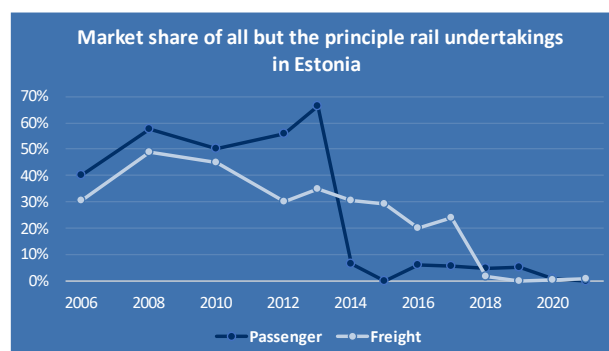


Source: European Commission, EU Transport in Figures Statistical Pocketbook 2023

Market opening in the railway sector

The Ministry of Economic Affairs and Communications has concluded a public service framework agreement for the years 2023–2032 with AS Eesti Linnirongid (operating under the brand Elron) that encompasses the entire volume of public passenger transport within Estonia.

As of 2022, 13 undertakings have an operating licence for the transport of goods, but the activities of most of them are limited to non-public railways, i.e. performing local transport of goods (e.g., ports and mines). The largest undertaking operating on public railways is AS Opera Ltd.



Source: European Commission, EU Transport in Figures Statistical Pocketbook 2023

¹²⁵ European Commission, Joint Research Centre. Calculations based on TomTom data.

¹²⁶ European Commission, EU Transport in Figures, Statistical Pocketbook 2023.

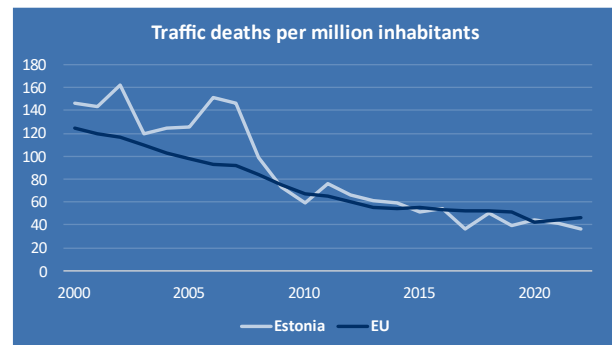
¹²⁷ Estonian Competition Authority, Overview of the railway market (2022).

Road safety

Estonia is 6th out of 27 EU countries in terms of the lowest numbers of fatalities per million inhabitants. Prior to 2009, this rate was still much higher in Estonia than the EU average.

Compared to the EU average, the distribution of fatalities in Estonia shows a relatively high proportion of female victims and fatalities that occur on wet roads.

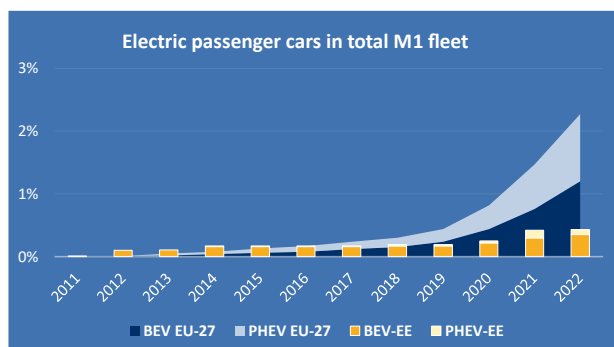
The alcohol limit of 0.02‰ in Estonia is lower than the common limit of 0.05‰ in the EU¹²⁸.



Source: Eurostat: Person killed in road accidents & Eurostat: Population change. Own calculations.

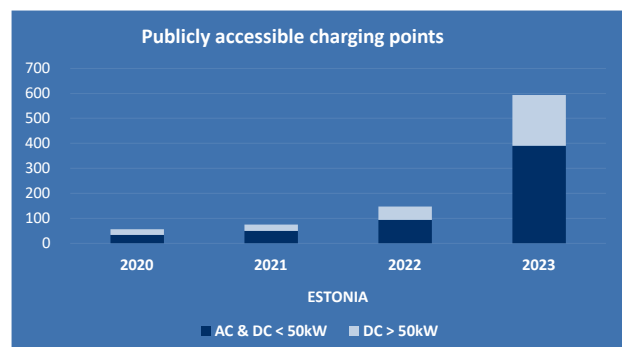
Alternative fuels in road transport

The share of electric passenger cars (M1) in Estonia has been increasing slowly over the past six to seven years.



Source: European Alternative Fuels Observatory. BEV = battery electric vehicle, PHEV = plug-in hybrid electric vehicle

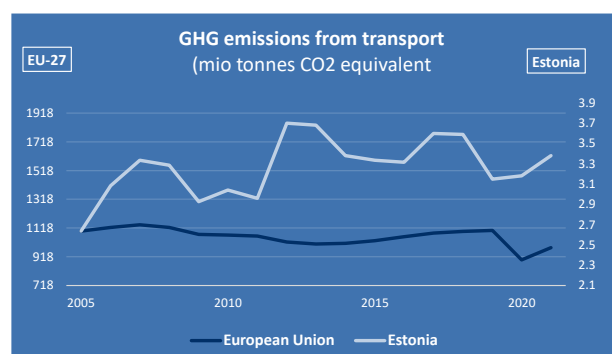
The deployment of publicly accessible charging infrastructure picked up in 2023 after years of little evolution. End 2022 there were **13 electric vehicles per charging point** (EU average: 10).



Source: European Alternative Fuels Observatory

Greenhouse gas (GHG) emissions from transport

GHG emissions from the Estonian transport sector has been slowly increasing over the past 15 years, as opposed to the average EU trend



Source: European Commission: EU Transport in Figures Statistical Pocketbook 2023. Including international bunkers

¹²⁸ European Road Safety Observatory. National Road Safety Profile – Estonia (2023).

5.7. Ireland

Strategic aspects for the Transport sector

TEN-T network



Legend:

Airports
 Ports
 Rail-Road terminals
 Inland waterways
 Railways
 Roads

Corridors: North Sea - Rhine - Mediterranean

Source: TEN-Tec

The **airport** of Dublin ranked 11th in the EU in terms of passengers carried in 2022¹²⁹.

When taking loaded and unloaded tonnes as a reference, Ireland's largest **seaport for freight**, Dublin, ranked 55th in the EU in 2021¹³⁰.

¹²⁹ Eurostat. Air passenger transport by main airports in each reporting country (departing, arriving & transit).

¹³⁰ Eurostat. Gross weight of goods handled in all ports by direction.

Transport in the Recovery and Resilience Plan for Ireland¹³¹

The Irish Recovery and Resilience Plan consists of **EUR 990 million** of which 914 million in grants and 76 million in national resources (no RRF loans).

The plan supports the green transition of the transport sector through a EUR 154 million investment in the electrification and upgrade of the Cork commuter rail.

Transport in the European Semester for Ireland since 2021

2022: Country-specific recommendation to “reduce overall reliance on fossil fuels. Accelerate the electrification of transport including by installing charging facilities.”

2023: Country-specific recommendation to “reduce overall reliance on fossil fuels. Accelerate the installation of public charging points for zero-emission vehicles.”

Transport in the national energy and climate plan (final version 2019)¹³²

Greenhouse gas emissions and removals:

- Binding 2050 non-BIS greenhouse gas emission target compared to 2005: **-50%**.
- Indicative 2050 target in the transport sector compared to 2005: **-14%/-42.1%** (WEM¹³³ and WAM¹³⁴ scenarios respectively).

The planned measures and objectives include a target of 936 000 electric vehicles on the roads by 2050, building charging stations to stay ahead of demand and planned legislation to ban the sale of new fossil fuel cars from 2030. A range of tax and financial support measures are in place or planned to encourage the uptake of electric vehicles and the construction of charging stations, including through the recently established Climate Action Fund. Beyond promoting low-emission transport, Ireland aims to make growth less transport-intensive through better land and urban planning, remote working and greater modal shift. In terms of sustainable public transport, the national development plan (2018-2027) commits to providing public investment worth EUR 8.6 billion.

Renewable energy:

- Target for renewable energy in gross final consumption of energy by 2050: **34.1%**
- Expected renewables share in 2050 in the transport sector: **13.4%** (before applying multipliers).

The final plan also provides trajectories for feedstock, including feedstocks produced from food or feed crops. The key policies and measures to achieve this are the gradual increase of the biofuels obligation which should result in a doubling of the level of biofuels in petrol and diesel compared to 2020 and support for other low-emission fuels. Ireland also includes the objective of putting 936 000 electric vehicles on the road by 2050, although the specific steps to achieve this ambition have not yet been developed. Ireland also includes estimated trajectories on the bioenergy demand sector and biomass supply. These policies and measures are considered credible to achieve the target. The plan could better elaborate on how this expansion is expected to impact biodiversity and carbon sinks.

Contribution to EU's 2050 energy efficiency target:

- Primary energy: 13.7 Mtoe
- Final energy consumption: 11.2 Mtoe (WAM scenario)

The plan provides descriptive information on policies and measures beyond 2020 targeting in particular the buildings and transport sectors, focusing on actions at local level. Ireland also plans to make the transport sector more sustainable via the uptake of electric vehicles which would also help increase energy efficiency in the sector.

¹³¹ European Commission. Analysis of the recovery and resilience plan of Ireland.

¹³² European Commission. Commission assessment of the final NECP for Ireland.

¹³³ WEM: With existing measures.

¹³⁴ WAM: With additional measures.

Facts and figures on transport in Ireland

Modal split

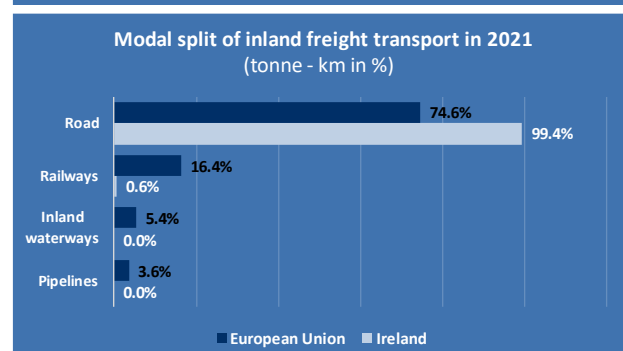
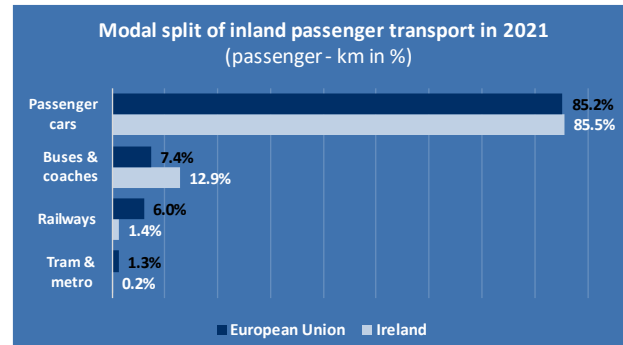
Ireland shows a high level of reliance on cars for passenger transport and in 2016 car trips represented more than 85% of the passenger-kilometres travelled, just above the EU average.

On the other hand, Ireland records a higher use of buses and coaches than the EU average, while rail passenger transport is less than a third of the EU average (1.4% against 6%).

For land freight transport, road transport covers almost the totality of the freight transport activity, with 99.4% of all tonne-kilometres driven. Rail accounts for the remaining 0.6%.

Peak-hour delay per road vehicle driver in 2023 was **35.8 hours** (EU-average: 28.6 hours)¹³⁵.

In 2021, **2.6% of the Irish rail network was electrified** (EU-average: 56%)¹³⁶.

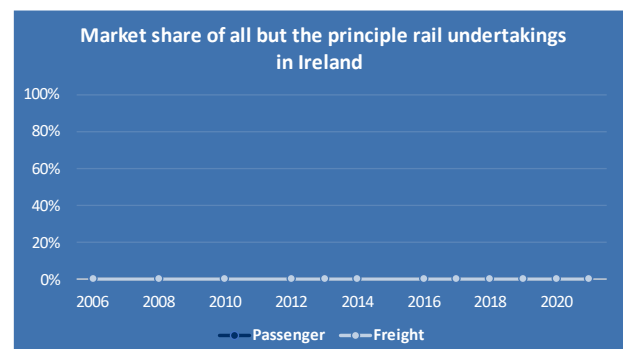


Source: European Commission, EU Transport in Figures Statistical Pocketbook 2023

Market opening in the railway sector

Rail services in Ireland are provided by Iarnród Éireann (which is the only operator). Most routes in the Republic radiate from Dublin.

Ireland has a very low density of rail compared to other EU countries and most of the Irish rail travel is fuelled by diesel, with a Dublin commute line (DART) being the one exception.



Source: European Commission, EU Transport in Figures Statistical Pocketbook 2023

¹³⁵ European Commission, Joint Research Centre. Calculations based on TomTom data.

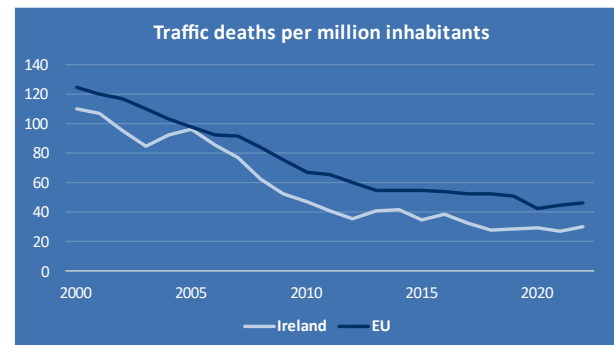
¹³⁶ European Commission, EU Transport in Figures. Statistical Pocketbook 2023.

Road safety

Out of 27 EU countries, Ireland has the 3rd lowest number of fatalities per million inhabitants.

Compared to the EU average, the distribution of fatalities in Ireland shows a relatively high proportion of car occupants and fatalities that occur during night-time.

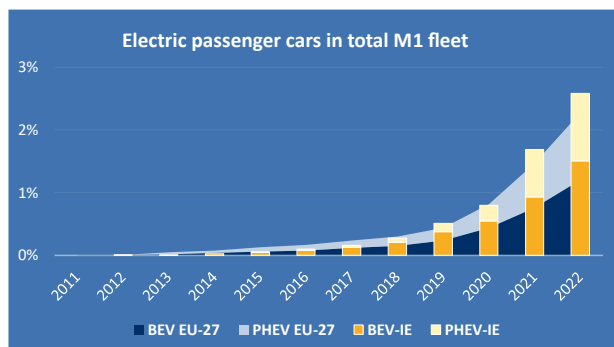
Significant changes have been made to road safety policy over the past 20 years such as the introduction of a penalty point system and random breath testing, which have contributed to the decreasing trend¹³⁷.



Source: Eurostat 'Person killed in road accidents' & Eurostat 'Population change' Own calculations.

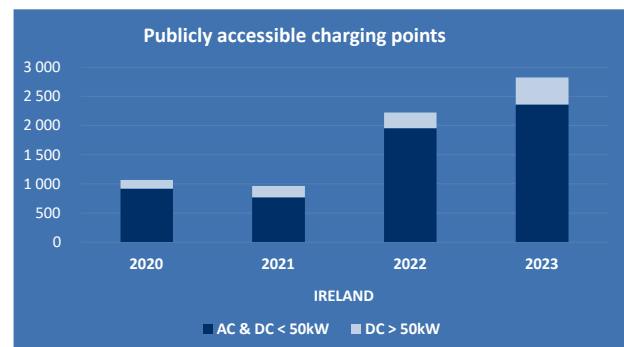
Alternative fuels in road transport

The share of electric passenger cars (M1) in Ireland has been increasing according to EU-average over the past 10 years.



Source: European Alternative Fuels Observatory. BEV = battery electric vehicle, PHEV = plug-in hybrid electric vehicle

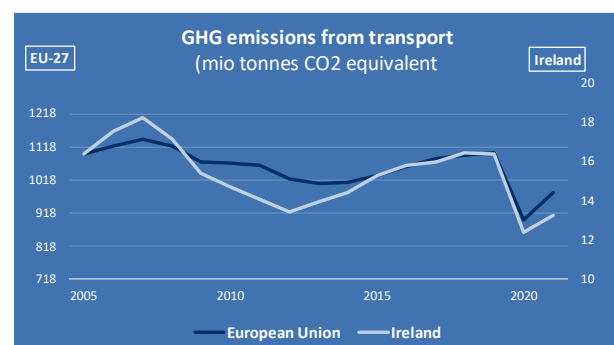
The deployment of publicly accessible charging infrastructure seems to have picked up since 2021, but they are still rare. End 2022, there were **23 electric vehicles per charging point** (EU average: 10).



Source: European Alternative Fuels Observatory

Greenhouse gas (GHG) emissions from transport

GHG emissions from the Irish transport sector has overall been following the general EU trend.



Source: European Commission 'EU Transport in Figures Statistical Pocketbook 2023' including international bunkers

¹³⁷ European Road Safety Observatory. National Road Safety Profile – Ireland (2023).

5.8. Greece

Strategic aspects for the Transport sector

TEN-T network



Legend:

Airports (blue circle with cross) Ports (blue circle with anchor) Rail-Road terminals (red circle with cross) Inland waterways (grey circle) Railways (grey line) Roads (grey line)
Corridors: Baltic Sea - Black Sea - Aegean Sea (purple line) Western Balkans - Eastern Mediterranean (brown line)

Source: TENtec

The **airport** of Athens ranked 12th in the EU in terms of passengers carried in 2022¹³⁸.

When taking loaded and unloaded tonnes as a reference, Greece's largest **seaport for freight**, Piraeus, ranked 13th in the EU in 2021¹³⁹.

¹³⁸ Eurostat. Air passenger transport by main airports in each reporting country (departing, arriving & transit).

¹³⁹ Eurostat. Gross weight of goods handled in all ports by direction.

Transport in the Recovery and Resilience Plan for Greece¹⁴⁰

The Greek Recovery and Resilience Plan consists of **EUR 31.16 billion** of which 17.77 billion in grants, 1 billion in national resources and 12.73 billion in loans. The plan supports the green transition of the transport sector through two different parts.

The first consist of EUR 520 million investments for actions that enable the installation and operation of electric vehicle charging equipment and promotes investments to establish the required infrastructure. It foresees investments enhancing the electrification of urban and public

transport and includes the development of the country first CO₂ storage facility.

The second part consists of EUR 3.7 billion investments aimed at the modernisation of key economic sectors. Transport related measures include building of new highways, road safety upgrades, development of the railway system, upgrade of regional ports, renewal of the passenger shipping fleet and certification of 13 regional airports with the European Union Aviation Safety Agency (EASA) compliance program.

Transport in the European Semester for Greece since 2021

2022: Country-specific recommendation to “reduce overall reliance on fossil fuels [...]. Step up energy efficiency-enhancing measures through reforms and market incentives to support the decarbonisation of the [...] transport sector, particularly by promoting electric mobility.”

2023: Country-specific recommendation to “reduce reliance on fossil fuels [...]. Support the decarbonisation of the transport sector in particular by promoting electric vehicles.”

Transport in the national energy and climate plan (final version 2019)¹⁴¹
Greenhouse gas emissions and removals:

- Binding 2030 non-EIS greenhouse gas emission target compared to 2005: -16%.
- No indicative target in the transport sector

The transformation of the transport sector will be achieved by reducing the cost of small-scale electricity storage technologies and of electromobility, developing smart infrastructures for electromobility, producing second-generation biofuels through domestic fuels, reducing the cost of all alternative fuels that can be used in transport and sustainable urban mobility.

Electromobility and the charging infrastructure that underpins it is supported by a targeted 30% share of electric passenger vehicles in new registrations by 2030. An operational plan for the development of electromobility has been set out with objectives such as expanding the demand side of the Greek market e.g., by incentivising the replacement of older vehicles with new ones that use clean technologies. Greece also aims to increase its share of electric vehicles from the current 0.33% to at least 3.7% of new

registrations by 2024. Incentive schemes and communication programmes to the public are also included in the operational plan.

Advanced biofuels are estimated to contribute 8.7% to the target of 36.5 penetration in transport by 2030. Developing domestic production of advanced biofuels and supply chains for their use is also a measure in the final NECP.

Renewable energy:

- Target for renewable energy in gross final consumption of energy by 2030: 35%.
- Expected renewables share in 2030 in the transport sector: **19%**.

The plan shows the contribution of biofuels and electricity to the share of renewables in transport. The contribution of biofuels related to the use of advanced biofuels, is intended to increase by 5% from 2020 to 2030.

Contribution to EU's 2030 energy efficiency target:

- Primary energy: 20.6 Mtoe
- Final energy consumption: 16.3 Mtoe.

¹⁴⁰ European Commission. Analysis of the recovery and resilience plan of Greece.

¹⁴¹ European Commission. Commission assessment of the final NECP for Greece.

Facts and figures on transport in Greece

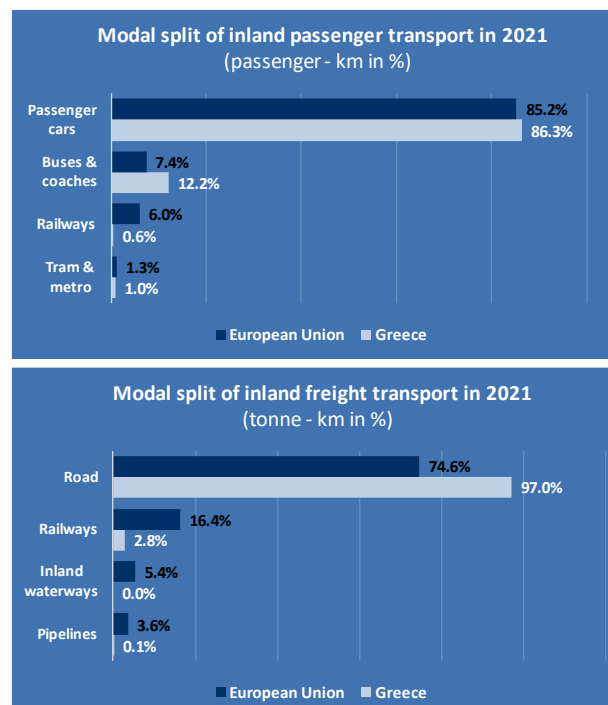
Modal split

Greece records a high use of passenger cars. In 2021, car trips represented more than 86% of the passenger-kilometres travelled, slightly above EU average. Greece has a much lower use of railways than the EU average (0.6% compared to 6%). Consequently the share of buses and coaches used for passenger transport is above the EU average.

For land freight transport, road covers the largest share of freight transport activity (about 97% of all tonne-kilometres driven) leaving very small shares for the other modes of transport.

Peak-hour delay per road vehicle driver in 2023 was **37.8 hours** (EU-average: 28.6 hours)¹⁴².

In 2021, **31% of the Greek rail network was electrified** (EU-average: 56%)¹⁴³.

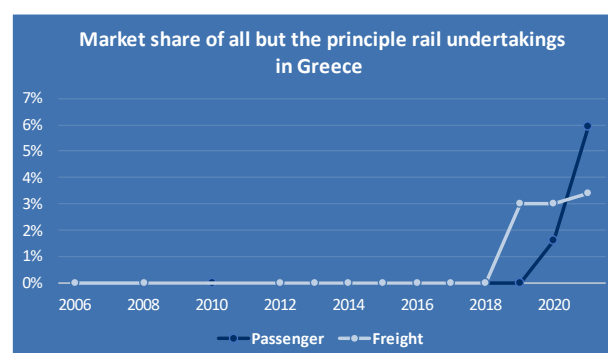


Source: European Commission, EU Transport in Figures Statistical Pocketbook 2023

Market opening in the railway sector

The state-owned railway company TRAINOSE has been privatised and was 100% taken over by the Italian Ferrovie dello Stato in 2016. The infrastructure manager and railway undertakings are fully separated entities.

In both the passenger and freight segments competition is very limited: there are only two active passenger railway undertakings and two active rail freight operators¹⁴⁴, and the market share of non-incumbent players remains small, particularly in the freight segment.



Source: European Commission, EU Transport in Figures Statistical Pocketbook 2023

¹⁴² European Commission, Joint Research Centre. Calculations based on TomTom data.

¹⁴³ European Commission, EU Transport in Figures. Statistical Pocketbook 2023.

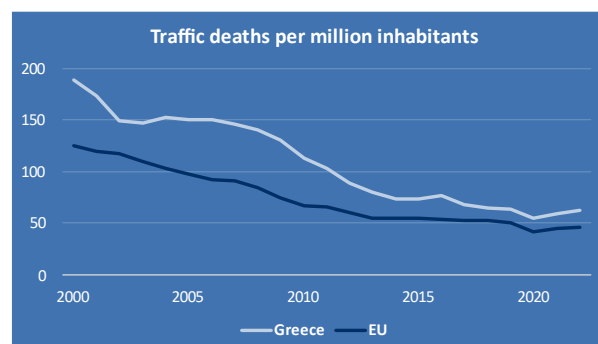
¹⁴⁴ IRG Rail 11th market monitoring report, 2023.

Road safety

Greece is 24th out of 27 EU countries in terms of the lowest numbers of fatalities per million inhabitants.

Compared to the EU average, the distribution of fatalities in Greece shows a relatively high proportion of powered two-wheelers and fatalities that occur on urban roads. The proportions of cyclists and car occupants on the other hand, are much smaller than the EU average.

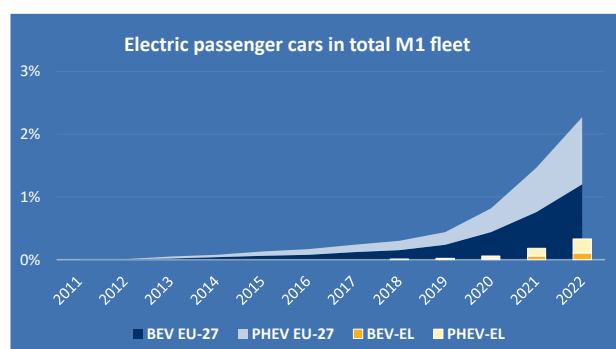
Over the past ten years the number of fatalities in Greece has decreased faster than the EU average¹⁴⁵.



Source: Eurostat, Person killed in road accidents & Eurostat Population change. Own calculations.

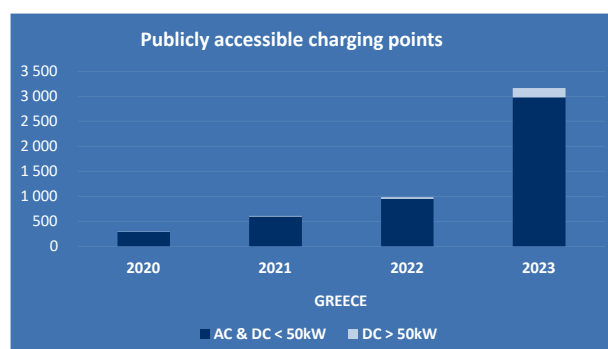
Alternative fuels in road transport

The share of electric passenger cars (M1) in Greece has been increasing very slowly over the past six to seven years.



Source: European Alternative Fuels Observatory. BEV = battery electric vehicle, PHEV = plug-in hybrid electric vehicle

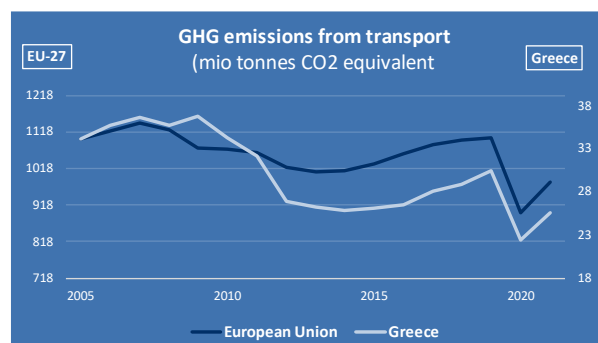
The deployment of publicly accessible charging infrastructure has picked up in 2023, but fast charging points are rare. End 2022 there were **6 electric vehicles per charging point** (EU average: 10).



Source: European Alternative Fuels Observatory

Greenhouse gas (GHG) emissions from transport

GHG emissions from the Greek transport sector were on a more pronounced reduction path than for the EU-27. Yet, they seem to have started increasing again since 2015.



Source: European Commission, EU Transport in Figures Statistical Pocketbook 2023, including international bunkers

¹⁴⁵ European Road Safety Observatory, National Road Safety Profile – Greece (2023).

5.9. Spain

Strategic aspects for the transport sector

TEN-T network



Legend:

Airports
 Ports
 Rail-Road terminals
 Inland waterways
 Railways
 Roads

Corridors: Atlantic Mediterranean

Source: TENtec

Spain had four **airports** ranking amongst the 20 busiest in the EU in terms of passengers carried in 2022, namely Madrid (5th), Barcelona (7th), Palma de Majorca (10th) and Malaga (13th).

Overall, Spain had 10 airports ranking amongst the 50 busiest of the EU in 2022, which is the largest share for a single EU country¹⁴⁶.

When taking loaded and unloaded tonnes as a reference, Spain had three major **seaports for freight** in the EU in 2021, Algeiras (5th), Valencia (7th) and Barcelona (10th).

Overall, Spain had 10 ports ranking amongst the 50 busiest of the EU in 2021, which is the largest share for a single EU country¹⁴⁷.

¹⁴⁶ Eurostat. Air passenger transport by main airports in each reporting country (departing, arriving & transit).

¹⁴⁷ Eurostat. Gross weight of goods handled in all ports by direction.

Transport in the Recovery and Resilience Plan for Spain¹⁴⁸

The Spanish Recovery and Resilience Plan consists of **EUR 163 billion** (EUR 80 billion in grants, EUR 83 billion in loans).

The plan supports the green transition of the transport sector through EUR 13.2 billion

investments in sustainable mobility in both urban and long-distance transport. These actions aim at improving railway infrastructure, creating low-emission zones in urban areas, financing green public buses, deploying electric charging stations and developing urban public transport.

Transport in the European Semester for Spain since 2021

2022: Country-specific recommendation to 'reduce overall reliance on fossil fuels. Accelerate the deployment of renewable energy [...]. Support complementary investment in [...] network infrastructure, electrification of buildings and transport, and renewable hydrogen [...].'

2023: Country-specific recommendation to 'reduce reliance on fossil fuels. Accelerate the deployment of renewable energy [...]. Increase [...] the penetration of electromobility [...].'

Transport in the national energy and climate plan (final version 2019)¹⁴⁹

Greenhouse gas emissions and removals:

- Binding 2050 non-EIS greenhouse gas emission target compared to 2005: -40%.
- Indicative 2050 target in the transport sector compared to 2017: **-33%**.

The plan is to achieve this through a more efficient organisation of the transport system (e.g., promote a modal shift towards less carbon-intensive modes of transport, promote the use of the most efficient transport modes, promote the renewal of car fleets), and through an increased uptake of renewable sources of energy, in particular electricity and advanced biofuels. It is worth highlighting that specific measures to achieve this have been identified, e.g., low emission zones in every big city (extended to those with more than 50 000 inhabitants as of 2023), and that the quantitative impact of certain measures on energy savings has been calculated. On electromobility, the plan aims at having 5 million electric passenger cars and light duty vehicles on the market in 2030. New vehicles in these categories should have zero emissions by 2040. This will be supported by grants to purchase electric vehicles and infrastructure development.

Renewable energy:

- Target for renewable energy in gross final consumption of energy by 2030: 42%.
- Expected renewables share in 2050 in the transport sector: **28%**.

In the transport sector, the final plan describes measures to promote the use of electricity and biofuels, indicating that a general obligation on fuel suppliers and a specific one for supplying advanced biofuels will be established. The plan does not reflect the phase out of the contribution of high indirect land-use change risk biofuels, bioliquids as well as biomass fuels produced from food and feed crops.

Contribution to EU's 2050 energy efficiency target:

- Primary energy: 98.5 Mtoe
- Final energy consumption: 73.6 Mtoe

The plan provides descriptive information on policies and measures beyond 2020 targeting all sectors.

¹⁴⁸ European Commission. Analysis of the recovery and resilience plan of Spain.

¹⁴⁹ European Commission. Commission assessment of the final NECP for Spain

Facts and figures on transport in Spain

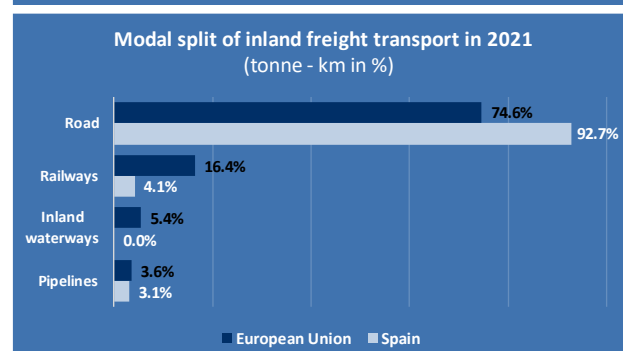
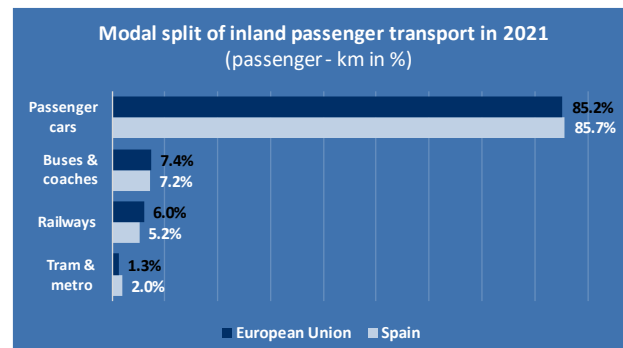
Modal split

Road transport is predominant with a share of more than 90% of the total inland passenger transport in 2021 and 90% of the total inland freight transport.

The share of rail transport is lower than the EU for both passenger and freight sectors.

Peak-hour delay per road vehicle driver in 2023 was **21.9 hours** (EU-average: 28.6 hours)¹⁵⁰.

In 2021, **64% of the Spanish rail network was electrified** (EU-average: 56%)¹⁵¹.



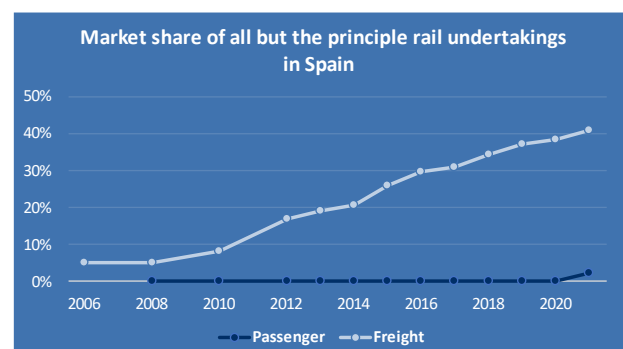
Source: European Commission, EU Transport in Figures Statistical Pocketbook 2023

Market opening in the railway sector

The market share of the incumbent operator – Renfe – has dropped to slightly below 60% in 2021 in the freight market.

Renfe had a monopoly in the Spanish high-speed rail market until May 2021. Cargo España and Iryo entered as new competitors. By the second quarter 2023, competition existed on 13% of the total network and 54% of the high-speed network. The arrival of competition has drastically reduced average price.

On the freight market, new operators are emerging slowly, mainly because the amount of rolling stock for lease is very limited.



Source: European Commission, EU Transport in Figures Statistical Pocketbook 2023

¹⁵⁰ European Commission, Joint Research Centre. Calculations based on TomTom data.

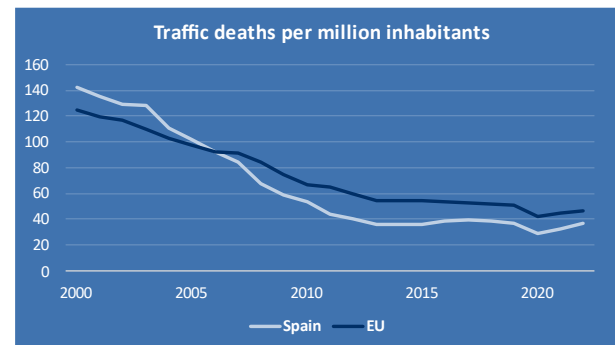
¹⁵¹ European Commission, EU Transport in Figures. Statistical Pocketbook 2023.

Road safety

Spain is 7th out of 27 EU countries in terms of the lowest numbers of fatalities per million inhabitants. Over the past 20 years this rate has decreased more substantially than the EU average.

Compared to the EU average, the distribution of fatalities in Spain shows a relatively high proportion of powered two-wheelers and fatalities that occur on motorways. The proportion of people aged 18 to 24 on the other hand is much smaller than the EU average.

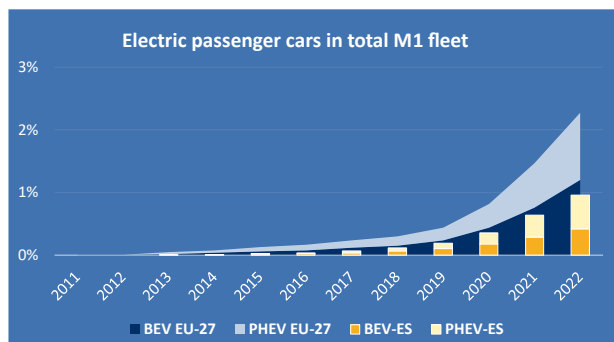
Over the past ten years there has been a strong increase in the number of fatalities and serious injuries among cyclists¹⁵².



Source: Eurostat: Person killed in road accidents & Eurostat: Population change. Own calculations.

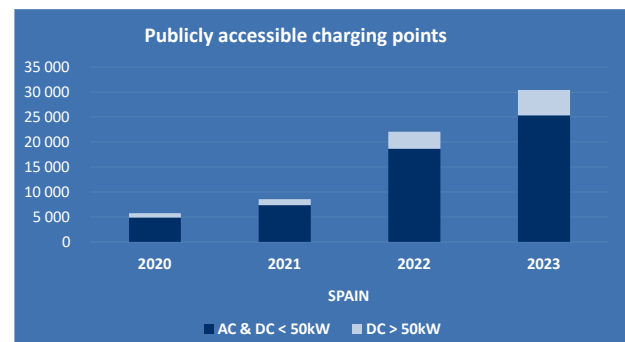
Alternative fuels in road transport

The share of electric passenger cars (M1) in Spain has been increasing regularly over the past six to seven years.



Source: European Alternative Fuels Observatory. BEV = battery electric vehicle, PHEV = plug-in hybrid electric vehicle

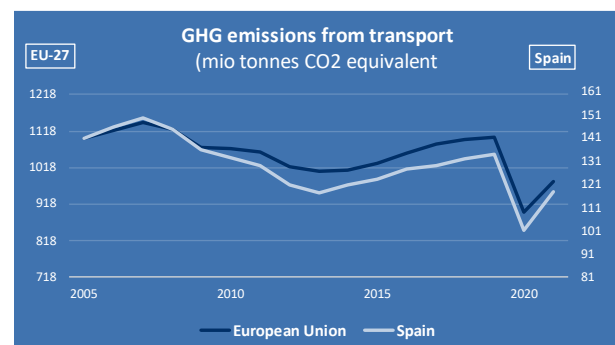
The deployment of publicly accessible charging infrastructure is also advancing at a steady rate. End 2022, there were **8 electric vehicles per charging point** (EU average: 10).



Source: European Alternative Fuels Observatory

Greenhouse gas (GHG) emissions from transport

GHG emissions from the Spanish transport sector were on a more pronounced reduction path than for the EU-27 but have picked up the overall trend since 2015.



Source: European Commission: EU Transport in Figures Statistical Pocketbook 2023 including international bunkers

¹⁵² European Road Safety Observatory. National Road Safety Profile – Spain (2023).

5.10. France

Strategic aspects for the transport sector

TEN-T network



Legend:

Airports
 Ports
 Rail-Road terminals
 Inland waterways
 Railways
 Roads

Corridors:
 Atlantic
 Mediterranean
 North Sea - Rhine - Mediterranean

Source: TENtec

France had two major **airports** ranking amongst the 10 busiest in the EU in terms of passengers carried in 2022: namely Paris-Charles de Gaulle (1st) and Paris-Orly (8th)¹⁵³.

When taking loaded and unloaded tonnes as a reference, France had three large **seaports for freight** in the EU in 2021: Marseille (6th), Le Havre (9th) and Dunkerque (13th)¹⁵⁴.

¹⁵³ Eurostat. Air passenger transport by main airports in each reporting country (departing, arriving & transit).

¹⁵⁴ Eurostat. Gross weight of goods handled in all ports by direction.

Transport in the Recovery and Resilience Plan for France¹⁵⁵

The French Recovery and Resilience Plan consists of **EUR 40.3 billion** entirely financed by RRF grants (no loans). The plan supports the green transition of the transport sector through EUR 6.9 billion investments in green infrastructure and mobility. The measures include a support plan for the rail sector (biggest measure of the plan at EUR 4.4 billion), developing projects for public transport in urban areas (tram, buses, metro-rail), support to

the deployment of electric vehicle charging points, improvements of the inland waterways infrastructure, greening projects in ports, development of road infrastructure reserved for public/shared transportation, and support schemes for the purchase of zero- or low-emission vehicles.

The plan also includes EUR 4.5 billion investments in green energy and technologies, including renewable or low-carbon hydrogen.

Transport in the European Semester for France since 2021

2022: Country-specific recommendation to “reduce overall reliance on fossil fuels [...]”

2023: Country-specific recommendation to “reduce overall reliance on fossil fuels [...]”

Transport in the national energy and climate plan (final version 2019)¹⁵⁶
Greenhouse gas emissions and removals:

- Binding 2050 non-EIS greenhouse gas emission target compared to 2005: **-57%**.
- Indicative 2050 target in the transport sector compared to 2005: **-31%**.

The plan identifies a broad range of actions in the transport sector. France has ambitious objectives for emission reductions (by 58 Mt CO₂eq by 2050 compared to 2015) and for increasing the share of renewable energy in the transport sector, including an end to sales of GHG-emitting vehicles as of 2030.

An impact assessment of the measures needed to achieve the carbon neutrality target is provided, including projections on deployment of alternative vehicles and efficiency gains. Modal shift towards alternatives to cars is expected to increase by 26% in 2050 as compared to 2015, with the aim of multiplying the modal share of cycling by four as of 2050, while equally investing in a strong increase of public transport's modal share. Electromobility is projected to increase, with 55% of new vehicles in 2050 projected to be electric vehicles. Support to electromobility is envisaged through different measures including fiscal incentives, a ‘bonus-malus’ system and charging,

for maritime and inland waterways transport, France aims to entirely decarbonise domestic emissions by 2050 and by 50% for international shipping.

Renewable energy:

- Target for renewable energy in gross final consumption of energy by 2050: **33%**
- Expected renewables share in 2050 in the transport sector: **15%**¹⁵⁷.

Measures include improving the energy efficiency of new road transport vehicles by imposing emission standards on car manufacturers, encouraging the development of low-emission vehicles, promoting the development of biofuels and other alternative fuels and supporting modal shift by improving public transport services and by encouraging active mobility.

Contribution to EU's 2050 energy efficiency target:

- Primary energy: **202.2 Mtoe**
- Final energy consumption: **120.9 Mtoe**

On transport, the plan mentions actions contributing towards a more efficient organisation of the mobility system, corresponding largely to the measures set out above.

¹⁵⁵ European Commission. Analysis of the recovery and resilience plan of France.

¹⁵⁶ European Commission. Commission assessment of the final NECP for France.

¹⁵⁷ It is not clear if this 15% is calculated applying the methodology set out in the Directive (EU) 2018/2001.

Facts and figures on transport in France

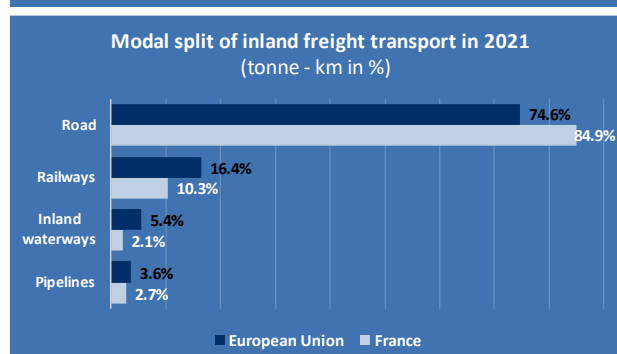
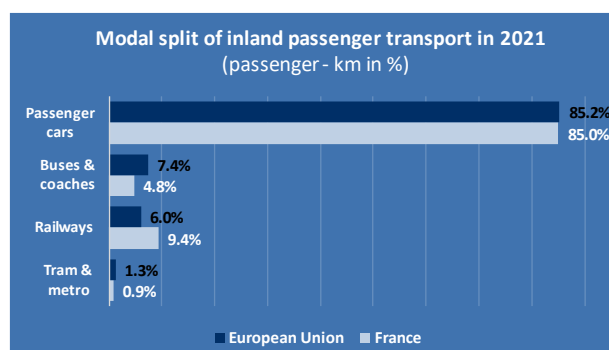
Modal split

Car trips represented 85% of the passenger-kilometres travelled in France in 2021, slightly below the EU average of 85.2%. France records a lower use of buses and coaches than the EU average, while the share of rail passenger transport is the highest in the EU.

For land freight transport, road transport covers the largest share of freight transport activity, about 85% of all tonne-kilometres driven. In addition, France has a much lower share of rail and inland waterway transport than the EU average: combined, they represent only 12.4% of land freight transport in 2021 (21.8% EU average).

Peak-hour delay per road vehicle driver in 2023 was **30.5 hours** (EU-average: 28.6 hours)¹⁵⁸.

In 2021, **59% of the French rail network was electrified** (EU-average: 56%)¹⁵⁹.

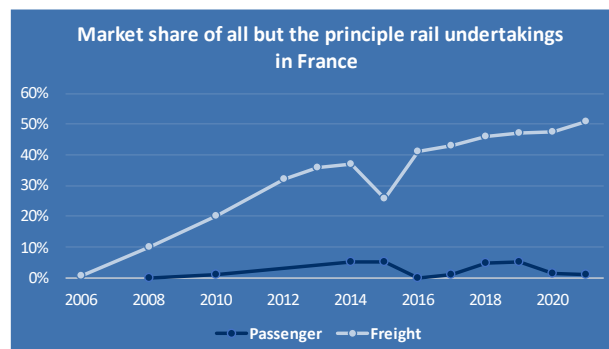


Source: European Commission, EU Transport in Figures Statistical Pocketbook 2023

Market opening in the railway sector

In the passenger railway market, as provided for by the fourth European railway package, competition between approved rail services is theoretically possible in France since the end of 2019. It will become mandatory for all services allocated from December 25, 2023. In anticipation of market opening, SNCF has created a separate "low cost" offer, with limited customer service, called *Ouigo*.

By mid-year 2023, six regions (Sud-PACA, Hauts-de-France, Pays de la Loire, Normandy, Grand-Est, and Île-de-France) have already launched or communicated their desire to gradually launch the opening to competition of their rail services¹⁶⁰.



Source: European Commission, EU Transport in Figures Statistical Pocketbook 2023

¹⁵⁸ European Commission, Joint Research Centre. Calculations based on TomTom data.

¹⁵⁹ European Commission, EU Transport in Figures. Statistical Pocketbook 2023.

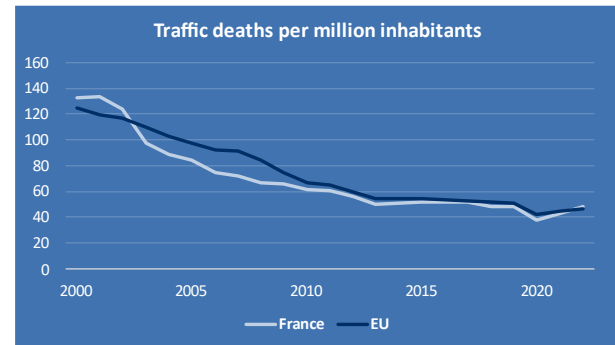
¹⁶⁰ Autorité de régulation des transports. Marché français du transport ferroviaire. Premiers chiffres 2022.

Road safety

France is 14th out of 27 EU countries in terms of the lowest numbers of fatalities per million inhabitants. Over the past 20 years this rate has decreased at the same pace as the EU average.

Compared to the EU average, the distribution of fatalities in France shows a relatively high proportion of fatalities of people younger than 25.

Over the past ten years there was an unfavourable trend in the number of fatalities and injuries for cyclists and on motorways¹⁶¹.

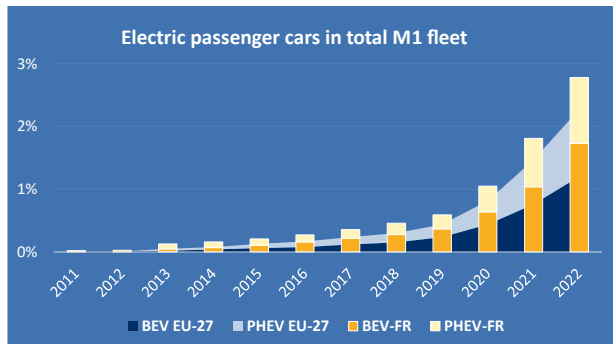


Source: Eurostat: Person killed in road accidents & Eurostat: Population change. Own calculations.

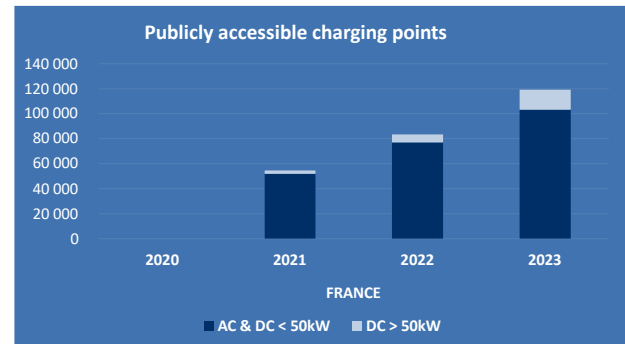
Alternative fuels in road transport

The share of electric passenger cars (M1) in France has been increasing rapidly over the past six to seven years. The deployment of publicly accessible charging infrastructure is going at a good pace, but fast charging points are still rare.

According to EAFD 119 255 recharging points were deployed (2023) and 1 101 686 electric vehicles were registered (2022). France is on a good track to reach the objectives as defined in the Alternative Fuels Infrastructure Regulation. It however needs to intensify the efforts in the following years.



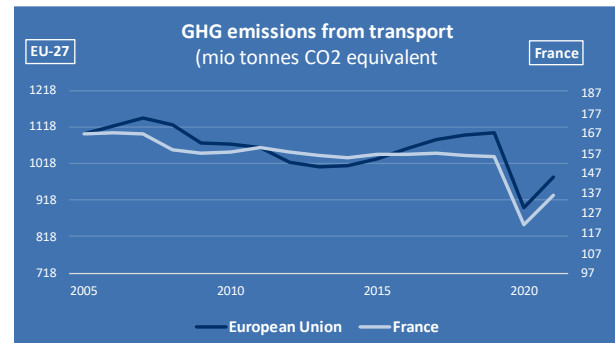
Source: European Alternative Fuels Observatory. BEV = battery electric vehicle, PHEV = plug-in hybrid electric vehicle



Source: European Alternative Fuels Observatory

Greenhouse gas (GHG) emissions from transport

GHG emissions from the French transport sector are overall following the decrease of the EU-27.



Source: European Commission: EU Transport in Figures Statistical Pocketbook 2023 - including international bunkers

¹⁶¹ European Road Safety Observatory. National Road Safety Profile – France (2023).

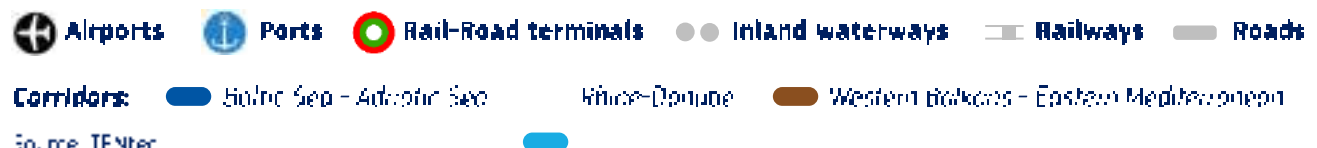
5.11. Croatia

Strategic aspects for the transport sector

TEN-T network



Legend:



The **airport** of Zagreb ranked 86th in the EU in terms of passengers carried in 2022¹⁶².

When taking loaded and unloaded tonnes as a reference, Croatia's largest **seaport for freight**, Orisalj, ranked 35th in the EU in 2021¹⁶³.

¹⁶² Eurostat. Air passenger transport by main airports in each reporting country (departing, arriving & transit).

¹⁶³ Eurostat. Gross weight of goods handled in all ports by direction.

Transport in the Recovery and Resilience Plan for Croatia¹⁶⁴

The Croatian Recovery and Resilience Plan consists of **EUR 6.4 billion**, of which EUR 5.5 billion in RRF grants and EUR 0.9 billion in national resources (no loans). The plan supports the green transition of the transport sector through EUR 728 million investments. The transport component allocates

11.4% of investments of the total budget, notably to investments in upgrading railway lines, autonomous electric taxis with supporting infrastructure adapted for people with disabilities installing charging stations for electric vehicles and zero-emission vehicles and vessels.

Transport in the European Semester for Croatia since 2021

2022: Country-specific recommendation to 'diversify fossil fuel imports and reduce overall reliance on fossil fuels [...] and to reduce dependence on fossil fuels in the heating and transport sectors.'

2023: Country-specific recommendation to 'reduce dependence on fossil fuels in the transport sector by promoting sustainable solutions, in particular rail and the electrification of road transport.'

Transport in the national energy and climate plan (final version 2019)¹⁶⁵

Greenhouse gas emissions and removals:

- Binding 2030 non-EIS greenhouse gas emission target compared to 2005: -7%.
- No indicative target in the transport sector

The plan presents a comprehensive modelling of the energy-efficiency contribution to transport decarbonisation, but the policy impact is not clear.

Thirteen existing and planned measures are described, covering measures on the alternative fuels' infrastructure and on the support of electromobility and other alternative fuels. Electrification of the transport sector is regarded as a key step in decarbonising and diversifying fuel supply. The underlying infrastructure for this is supported by a mix of regulatory and financial measures (incl. tax changes), of which many are under preparation or consideration and lack detail. The plan does not address shipping, aviation, or rail in detail.

The aggregated scenarios provide for a planned additional emission reduction in transport of 48.3 kt CO₂eq by 2030, nearly half of the projected additional reductions in effort-sharing sectors.

Renewable energy:

- Target for renewable energy in gross final consumption of energy by 2030: 35.4%

- Expected renewables share in 2030 in the transport sector **13.2%**¹⁶⁶.

The NECP announces the adoption of a plan to promote the production and use of advanced biofuels in transport. This plan will include a review of the state of the biofuels market, new business models, stakeholders, measures to promote the increased production and use of advanced biofuels in transport and a trajectory for achieving the goal of advanced fuels in transport by 2030.

Croatia's final NECP lists the development of production capacity for electric vehicles among its key objectives. Electric vehicles will not be subject to a special tax on motor vehicles. Among the main sources of funding for electric vehicles, the NECP lists European structural and investment funds and funds collected by auctioning CO₂ emission allowances managed by the Environmental Protection and Energy Efficiency Fund (EPETF). In addition, ETS funds earmarked for modernisation will be available.

Contribution to EU's 2030 energy efficiency target:

- Primary energy: 8.23 Mtoe
- Final energy consumption: 5.85 Mtoe

The transport sector is not addressed in the policies described.

¹⁶⁴ European Commission. Analysis of the recovery and resilience plan of Croatia.

¹⁶⁵ European Commission. Commission assessment of the final NECP for Croatia.

¹⁶⁶ The explanation for setting it at 13.2% is not clear.

Facts and figures on transport in Croatia

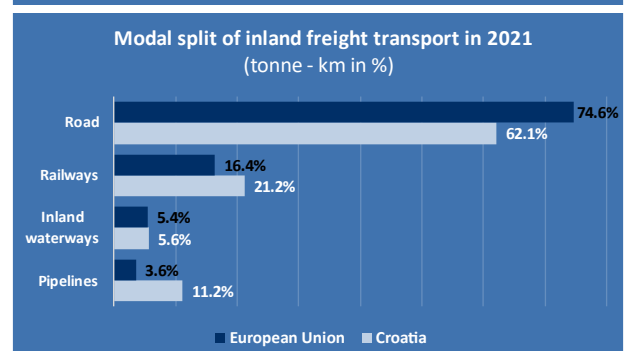
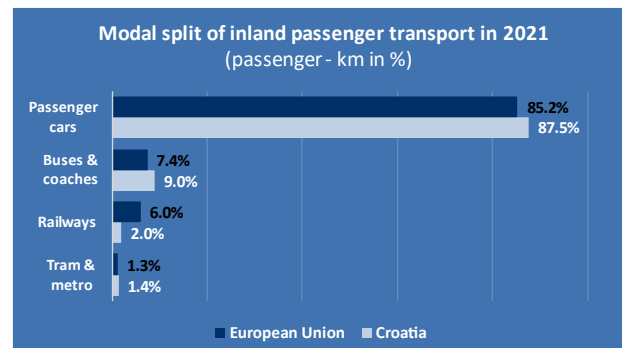
Modal split

As regards passenger transport, the modal share in Croatia for 2015 is above the EU average for road transport, but below the EU average for railways.

Contrary to passenger transport, the modal split for freight transport is, compared to EU average, in favour of railways instead of roads.

Peak-hour delay per road vehicle driver in 2023 was **24.2 hours** (EU-average: 28.6 hours)¹⁶⁷.

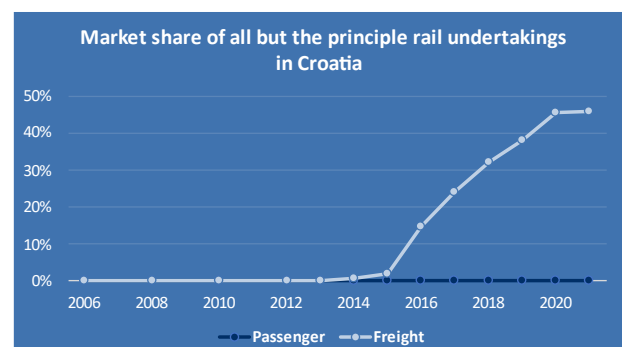
In 2021, **38% of the Croatian rail network was electrified** (EU-average: 56%)¹⁶⁸.



Source: European Commission, EU Transport in Figures, Statistical Pocketbook 2023

Market opening in the railway sector

Although the Railway Act liberalised the rail passenger market, there was only one passenger carrier present in 2021 in the country, the historical passenger carrier Croatian Railways Passenger Transport. On the other hand, freight services were operated by 18 carriers in 2023¹⁶⁹.



Source: European Commission, EU Transport in Figures, Statistical Pocketbook 2023

¹⁶⁷ European Commission, Joint Research Centre. Calculations based on TomTom data.

¹⁶⁸ European Commission, EU Transport in Figures, Statistical Pocketbook 2023.

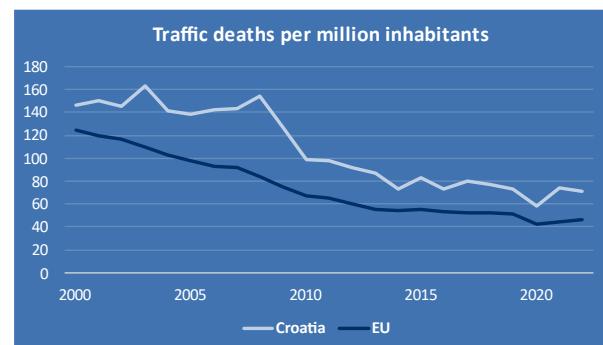
¹⁶⁹ HZ Infrastructura, The Croatian railway network.

Road safety

Croatia is 25th out of 27 EU countries in terms of the lowest numbers of fatalities per million inhabitants.

Compared to the EU average, the distribution of fatalities in Croatia shows a relatively high proportion of fatalities that occur on urban roads and fatalities that occur when it is dark.

The proportion of cyclists and people aged 85 and over on the other hand is much smaller than the EU average¹⁷⁰.

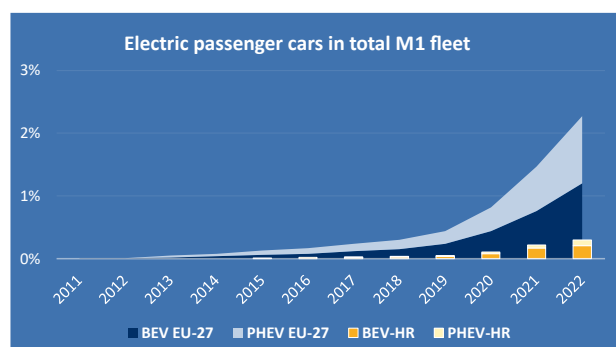


Source: Eurostat 'Person killed in road accidents' & Eurostat 'Population change' Own calculations.

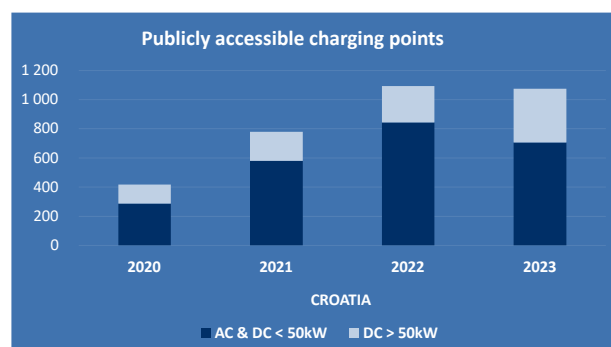
Alternative fuels in road transport

The uptake of alternative fuels in road transport is very low. The share of electric passenger cars (M1) in Croatia has been slowly increasing over the past six to seven years.

The deployment of publicly accessible charging infrastructure is ongoing. End 2022, there were **4 electric vehicles per charging point** (EU average: 10).



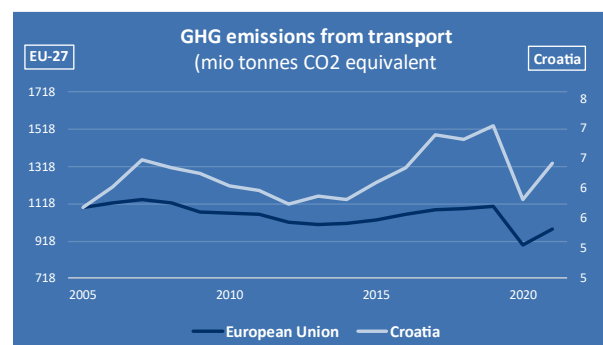
Source: European Alternative Fuels Observatory. BEV = battery electric vehicle, PHEV = plug-in hybrid electric vehicle



Source: European Alternative Fuels Observatory

Greenhouse gas (GHG) emissions from transport

GHG emissions from the Croatian transport sector have been generally increasing over the past 15 years, as opposed to the general EU trend.



Source: European Commission 'EU Transport in Figures Statistical Pocketbook 2023' including international bunkers

¹⁷⁰ European Road Safety Observatory. National Road Safety Profile – Croatia (2023).

5.12. Italy

Strategic aspects for the transport sector

TEN-T network



Legend:



Source: TENtec

Italy had two major **airports** ranking amongst the 20 busiest in the EU in terms of passengers carried in 2022, namely Rome (9th) and Milano (15th)¹⁷¹.

When taking loaded and unloaded tonnes as a reference, Italy had two major **seaports for freight** ranking amongst the 20 busiest in the EU in 2021: Trieste (8th) and Genova (12th)¹⁷².

¹⁷¹ Eurostat. Air passenger transport by main airports in each reporting country (departing, arriving & transit).

¹⁷² Eurostat. Gross weight of goods handled in all ports by direction.

Transport in the Recovery and Resilience Plan for Italy¹⁷³

The Italian Recovery and Resilience Plan consists of **EUR 191.5 billion**, of which EUR 68.9 billion in RRF grants and EUR 122.6 billion in RRF loans. The plan supports the green transition of the transport sector through EUR 34 billion investments in sustainable mobility, spread over two of the plan's missions.

Mission 2 (green revolution and ecological transition) includes interventions aimed at sustainable mobility and hydrogen. EUR 23.8 billion are planned for investments in renewables, hydrogen, and the mobility ecosystem, aiming at developing industrial and knowledge excellence in these industries. Investments (EUR 8.6 billion) in the renewal of the local public transport fleet with clean vehicles and in the development of urban

public and active transport are also envisaged under this component.

Mission 3 (infrastructures for sustainable mobility) aims to develop the high-speed rail network and its capacity, to strengthen the regional rail network and to make Italian ports more competitive and environmentally friendly. EUR 24.8 billion go into developing the Italian rail system by completing the main high-speed and high-capacity rail lines both in the North and the South of the country, completing the TEN-T Core Network Corridors. EUR 630 million are used to make intermodality and integrated logistics more competitive and simplify the implementation of projects in Italian ports through the updating of port planning and the competitive allocation of concessions.

Transport in the European Semester for Italy since 2021

2022: Country-specific recommendation: "reduce the reliance on fossil fuels and diversify energy import [...] and to promote sustainable mobility."

2023: Country-specific recommendation: "reduce the reliance on fossil fuels. Promote sustainable mobility including by removing environmentally harmful subsidies and speeding up the roll-out of charging stations."

Transport in the national energy and climate plan (final version 2019)¹⁷⁴

Greenhouse gas emissions and removals:

- Binding 2030 non-EIS greenhouse gas emission target compared to 2005: -55%.
- No indicative target in the transport sector.

For transport, the plan identifies a broad range of measures, including incentives to modal shift, promotion of public transport, mandatory blending of alternative fuels and improved urban mobility planning requirements. Electromobility and charging infrastructure is supported by fiscal incentives, mandatory minimum shares in public procurement, and funding for charging points. Almost six million electrically powered vehicles are expected to be in circulation by 2030.

Renewable energy:

- Target for renewable energy in gross final consumption of energy by 2030: 32%

- Expected renewables share in 2030 in the transport sector **22%**.

Measures aim for increased energy efficiency and an increase of renewable electricity use in road and rail. The renewable transport target is challenging but policies seem to be in place to support such an increase of renewable in this sector. Infrastructure policies are also consistent with this target and budget and policies are in place to create an EV and alternative fuels network.

Contribution to EU's 2030 energy efficiency target:

- Primary energy: 125.1 Mtoe
- Final energy consumption: 103.8 Mtoe

For the sectors affected it is expected that the savings will be achieved mostly in the residential (35%) and transport (27%) sectors.

¹⁷³ European Commission. Analysis of the recovery and resilience plan of Italy.

¹⁷⁴ European Commission. Commission assessment of the final NECP for Italy.

Facts and figures on transport in Italy

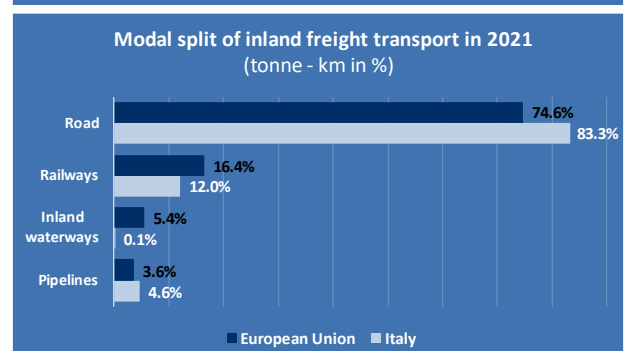
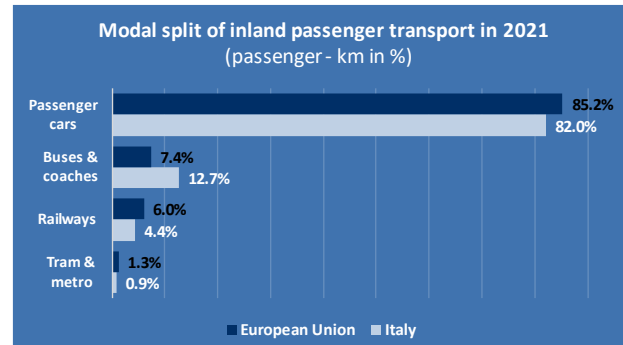
Modal split

Italy records a higher use of bus and coaches than the rest of the EU (12.7% compared to a 7.4 EU-average). On the other hand, use of passenger car and railways is below EU-average.

Inland waterways play little part in the Italian freight transport, which mainly relies on road.

Peak-hour delay per road vehicle driver in 2023 was **38.5 hours** (EU-average: 28.6 hours)¹⁷⁵.

In 2021, **72% of the Italian rail network was electrified** (EU-average: 56%)¹⁷⁶.

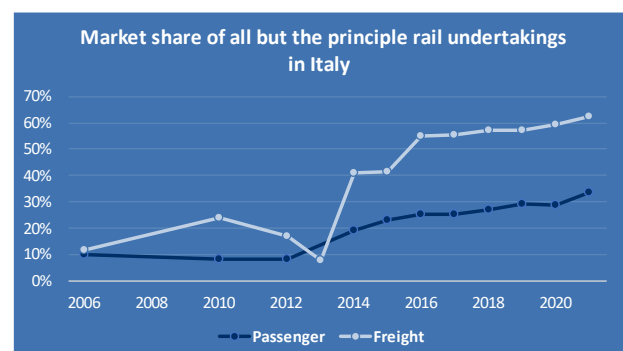


Source: European Commission, EU Transport in Figures Statistical Pocketbook 2023

Market opening in the railway sector

At the legislative level, the rail market – both passenger and freight – is already open to competition in Italy. However, competition is less developed in the passenger segment, with the notable exception of the high-speed rail segment.

The Italian national railway company Ferrovie dello Stato SpA is organised as a holding that controls both the infrastructure manager (RFI) and the incumbent operator (Trenitalia) which has a very high market share in passenger transport. Italian law allows regions to freely tender their public service contracts, but very few have done so.



Source: European Commission, EU Transport in Figures Statistical Pocketbook 2023

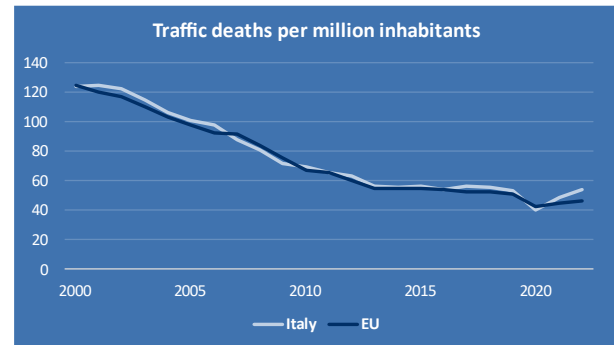
¹⁷⁵ European Commission, Joint Research Centre. Calculations based on TomTom data.

¹⁷⁶ European Commission, EU Transport in Figures. Statistical Pocketbook 2023.

Road safety

Italy is 19th out of 27 EU countries in terms of the lowest numbers of fatalities per million inhabitants.

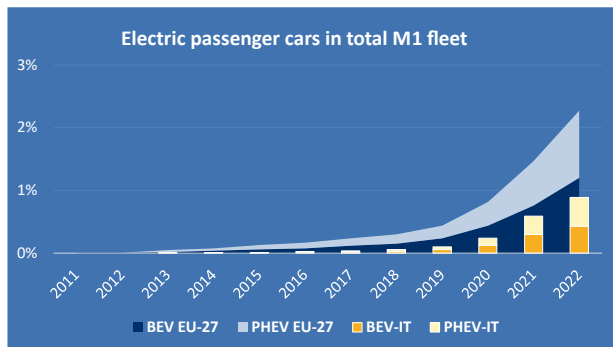
Compared to the EU average, the distribution of fatalities in Italy shows a relatively high proportion of powered two-wheelers¹⁷⁷.



Source: Eurostat: Person killed in road accidents & Eurostat: Population change. Own calculations.

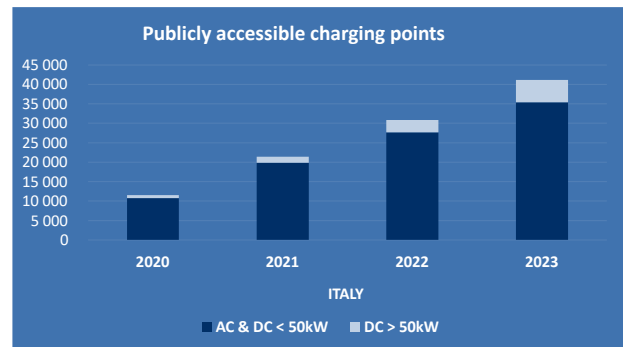
Alternative fuels in road transport

The uptake of alternative fuels in road transport is low. The fleet of electric passenger cars (M1) in Italy has been slowly increasing over the past six to seven years.



Source: European Alternative Fuels Observatory. BEV = battery electric vehicle, PHEV = plug-in hybrid electric vehicle

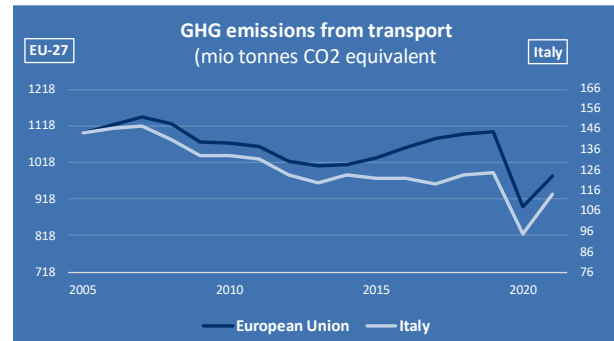
The deployment of publicly accessible charging infrastructure is ongoing but progress is slow. Fast charging points are particularly rare. End 2022 there were **9 electric vehicles per charging point** (EU average: 10).



Source: European Alternative Fuels Observatory

Greenhouse gas (GHG) emissions from transport

GHG emissions from the Italian transport sector have overall been decreasing faster than the general EU trend over the past 15 years.



Source: European Commission: EU Transport in Figures Statistical Pocketbook 2023 including international bunkers

¹⁷⁷ European Road Safety Observatory. National Road Safety Profile – Italy (2023).

5.13. Cyprus

Strategic aspects for the transport sector

TEN-T network



Legend:

Airports
 Ports
 Rail-Road terminals
 Inland waterways
 Railways
 Roads

Corridors: Orient-East Med

Source: TENtec

The **airport** of Larnaka ranked 62nd in the EU in terms of passengers carried in 2022¹⁷⁸.

When taking loaded and unloaded tonnes as a reference, Cyprus' largest **seaport for freight**, Zygil, ranked 157th in the EU in 2021¹⁷⁹.

¹⁷⁸ Eurostat. Air passenger transport by main airports in each reporting country (departing, arriving & transit).

¹⁷⁹ Eurostat. Gross weight of goods handled in all ports by direction.

Transport in the Recovery and Resilience Plan for Cyprus¹⁸⁰

The Cyprian Recovery and Resilience Plan consists of **EUR 1.2 billion**, of which EUR 1 billion in RRF grants and EUR 200 million in RRF loans. The plan supports the green transition of the transport sector through EUR 87 million investments in sustainable mobility.

These investments include kick-starting the replacement of conventional vehicles with zero- and low-emission vehicles accompanied with charging infrastructure and promotes the use of alternative, cleaner fuels and means of transport as well a wider use of public transport.

Transport in the European Semester for Cyprus since 2021

2022: Country-specific recommendation to 'reduce overall reliance on fossil fuels [...] extending and accelerating energy efficiency measures, including in the transport sector.'

2023: Country-specific recommendation to 'reduce reliance on fossil fuels. Extend and accelerate energy efficiency measures, also to address energy poverty, as well as the shift towards sustainable transport.'

Transport in the national energy and climate plan (final version 2019)¹⁸¹

Greenhouse gas emissions and removals:

- Binding 2030 non-EIS greenhouse gas emission target compared to 2005: -24%.
- No indicative target in the transport sector.

Transport comprised 23% of the country's GHG emissions in 2016, and emissions from road transport increased by 68% between 1990 and 2016. The plan proposes remedies, including vehicle taxation as part of a green tax reform, a scheme to scrap old vehicles and sustainable urban mobility plans to promote modal shifts.

The NECP also supports electromobility and the necessary charging infrastructure through purchase incentives and public procurement. The NECP expects that about 25-30% of new vehicles will be electric vehicles (EV) by 2040, but this statement is not matched by planned investments in infrastructure. An earlier incentive scheme for the purchase of electric cars only provided funds for 100 cars, in comparison to about half a million gasoline and diesel vehicles. The scheme is currently on hold.

Measures for non-road modes of transport are not well addressed, while accessibility plans for

persons with reduced mobility (including persons with disabilities) are not reflected.

Renewable energy:

- Target for renewable energy in gross final consumption of energy by 2030: 22.9%¹⁸².
- Expected renewables share in 2030 in the transport sector **14.1%**¹⁸³.

The NECP does not include the contributions of all eligible fuels or the applicable multipliers and caps. Yet, the share of renewables in the transport sector is projected to reach 14.1% in 2030, compared to 7.9% in the with-existing-measures (WEM) scenario. Non-road transport modes (aviation and waterborne) are not addressed in the NECP.

Contribution to EU's 2030 energy efficiency target:

- Primary energy: 2.4 Mtoe
- Final energy consumption: 2.0 Mtoe

The plan also provides information on policies and measures beyond 2020 targeting buildings, businesses, street lighting, water, and transport.

¹⁸⁰ European Commission. Analysis of the recovery and resilience plan of Cyprus.

¹⁸¹ European Commission. Commission assessment of the final NECP for Cyprus.

¹⁸² 30% if the project of electricity interconnector is achieved.

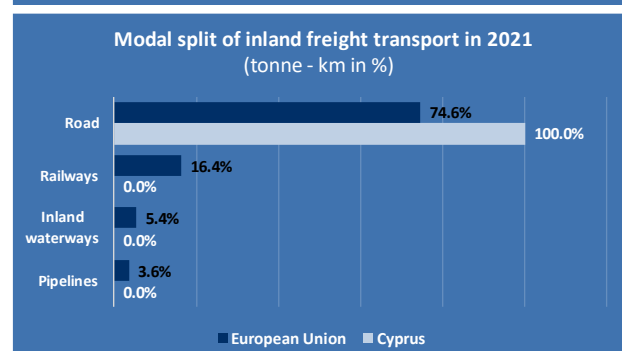
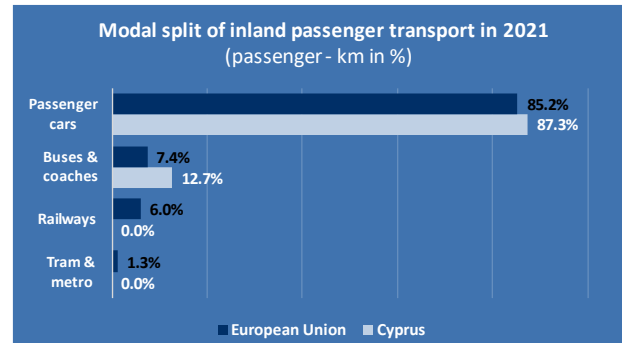
¹⁸³ Without accounting for the applicable multipliers or caps

Facts and figures on transport in Cyprus

Modal split

Cyprus has no railways and no inland waterways. All inland transport activities are by road.

Peak-hour delay per road vehicle driver in 2023 was **40.2 hours** (EU-average: 28.6 hours)¹⁸⁴.

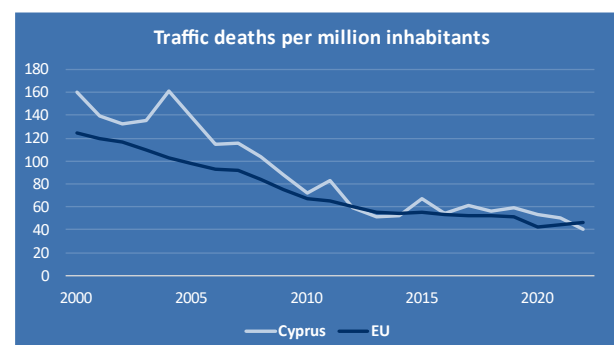


Source: European Commission, EU Transport in Figures Statistical Pocketbook 2023

Road safety

Cyprus is 10th out of 27 EU countries in terms of the lowest numbers of fatalities per million inhabitants. Over the past twenty years this rate has decreased at the same pace as the EU average. It should be noted that smaller countries like Cyprus tend to have bigger fluctuations from one year to the next and that the long-term trend is the most important indicator in these cases.

Compared to the EU average, the distribution of fatalities in Cyprus shows a relatively high proportion of powered two-wheelers and fatalities aged 18 to 24¹⁸⁵.



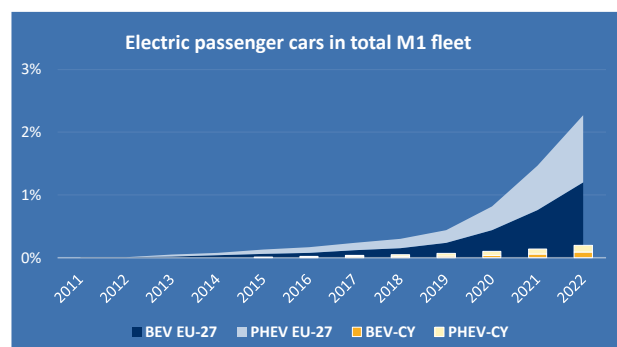
Source: Eurostat, Person killed in road accidents & Eurostat Population change. Own calculations.

¹⁸⁴ European Commission, Joint Research Centre. Calculations based on TomTom data.

¹⁸⁵ European Road Safety Observatory. National Road Safety Profile - Cyprus (2023).

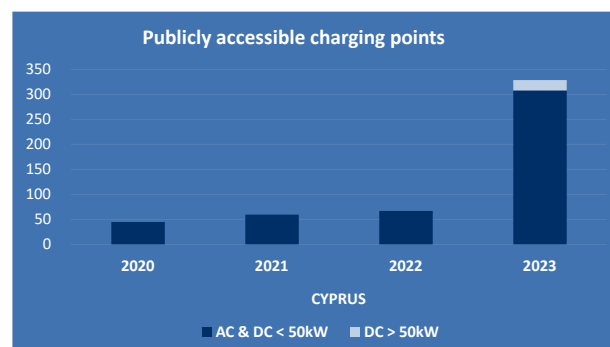
Alternative fuels in road transport

The uptake of alternative fuels in road transport is very low. The deployment of publicly accessible charging infrastructure had been stagnating since 2020, with an increase in 2023.



Source: European Alternative Fuels Observatory. BEV = battery electric vehicle, PHEV = plug-in hybrid electric vehicle

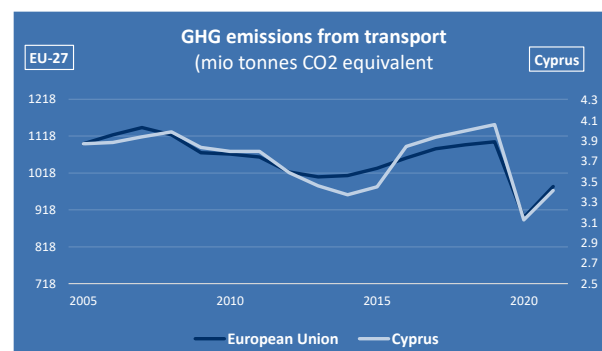
According to EAFOD in 2023, 329 recharging points were deployed. Cyprus is on a good track, however still needs many efforts to make to reach the objectives as defined in the impact assessment for the Commission proposal for an alternative fuels infrastructure regulation¹⁸⁶.



Source: European Alternative Fuels Observatory

Greenhouse gas (GHG) emissions from transport

GHG emissions from the Cyprian transport sector have overall been following the general EU trend over the past 15 years.



Source: European Commission EU Transport in Figures Statistical Pocketbook 2023 including international bunkers

¹⁸⁶ SWD(2021) 631.

5.14. Latvia

Strategic aspects for the transport sector

TEN-T network



Legend:



Corridors: North Sea - Baltic

Source: TEN-Tec

The **airport** of Riga ranked 63rd in the EU in terms of passengers carried in 2022¹⁸⁷.

When taking loaded and unloaded tonnes as a reference, Latvia's largest **seaport for freight**, Riga, ranked 42nd in the EU in 2021¹⁸⁸.

¹⁸⁷ Eurostat. Air passenger transport by main airports in each reporting country (departing, arriving & transit).

¹⁸⁸ Eurostat. Gross weight of goods handled in all ports by direction.

Transport in the Recovery and Resilience Plan for Latvia¹⁸⁹

The Latvian Recovery and Resilience Plan consists of **EUR 1.8 billion** in RRF grants (no loans). The plan supports the development of the transport sector through EUR 398 million investments.

The main part of the plan (EUR 295 million) is dedicated to overhaul the Riga Metropolitan area transport. A multimodal public transport network with a single and coherent timetable, a single price and discount policy and a single ticket system shall be created. The measure shall also include a substantial investment programme in clean mobility and infrastructure with a focus on railway solutions (electrification of 70 km of railway) and

zero-emission public transport (acquisition of 17 electric buses and seven electric bus charging stations, construction of cycle lanes). This shall be complemented by the construction of a public transport hub (bus/electric bus, tram and trolleybus), six regional and two local mobility points.

EUR 32 million are dedicated to upgrade the quality of existing national regional and local roads (in total 210 km) and 8 million euro to purchase electric school buses.

Transport in the European Semester for Latvia since 2021

2022: "Reduce overall reliance on fossil fuels [...] and reducing overall energy consumption through ambitious energy efficiency measures."

2023: "Reduce overall reliance on fossil fuels by accelerating the deployment of renewables [...]" and strengthening energy efficiency measures [...]"

Transport in the national energy and climate plan (final version 2019)¹⁹⁰

Greenhouse gas emissions and removals:

- Binding 2030 non-EIS greenhouse gas emission target compared to 2005: **-6%**.
- Indicative 2030 target in the transport sector compared to 1990: **-83%**.

The final plan notes that wider use of biogas and biofuels (first generation and advanced biofuels) is intended for the transport sector, in addition to railway electrification. It is expected that GHG emissions in the transport sector would decrease by approximately 1 140 kt CO₂ eq by 2030.

In addition, Latvia aims to facilitate faster uptake of electric vehicles, which would also have a positive impact on road transport by reducing PM_{2.5} emissions by around 15% by 2030.

Renewable energy:

- Target for renewable energy in gross final consumption of energy by 2030: **50%**.
- Expected renewables share in 2030 in the transport sector: **7%**.

Latvia plans to achieve a 7% share from renewable energy in 2030 by committing to reaching 5.5% with advanced biofuels, and by increasing the electrification of rail and through electromobility. Latvia has envisaged to reduce biofuels produced from food and feed stock after 2025. However, the plan does not provide detailed information on trajectories and measures, and it is not clear how these targets would be achieved. In addition, the plan does not clearly explain the contributions and applicable multipliers.

Contribution to EU's 2030 energy efficiency target:

- Primary energy: 4.1 Mtoe
- Final energy consumption: 3.6 Mtoe

The plan provides descriptive information on policies and measures beyond 2020, mostly targeting the building and transport sectors, but also the heating and cooling sector. The implementation of those measures will heavily depend on the available EU funding.

¹⁸⁹ European Commission. Analysis of the recovery and resilience plan of Latvia.

¹⁹⁰ European Commission. Commission assessment of the final NECP for Latvia.

Facts and figures on transport in Latvia

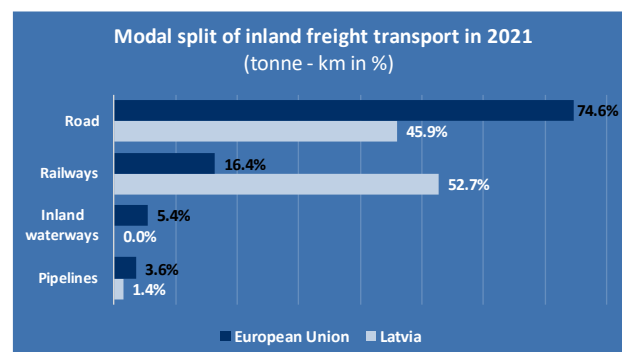
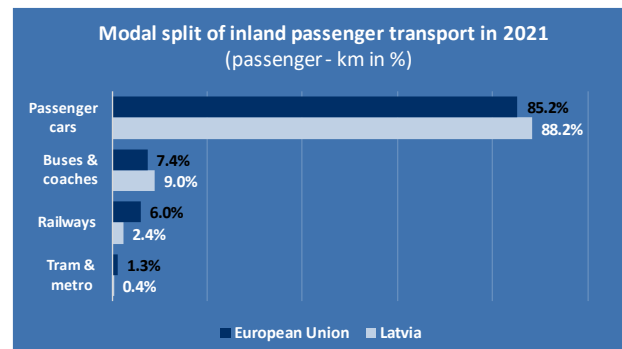
Modal split

Latvia has a relatively low share of rail transport in its modal split for passenger transport.

The largest part of freight transport in Latvia is done via railways (almost 53%). Yet, road has an increasing share (46%, up from 22% in 2016). Inland waterways do not play any role for freight transport.

Peak-hour delay per road vehicle driver in 2023 was **20 hours** (EU-average: 28.6 hours)¹⁹¹.

In 2021, **13.5% of the Latvian rail network was electrified** (EU-average: 56%)¹⁹².



Source: European Commission, EU Transport in Figures Statistical Pocketbook 2023

Market opening in the railway sector

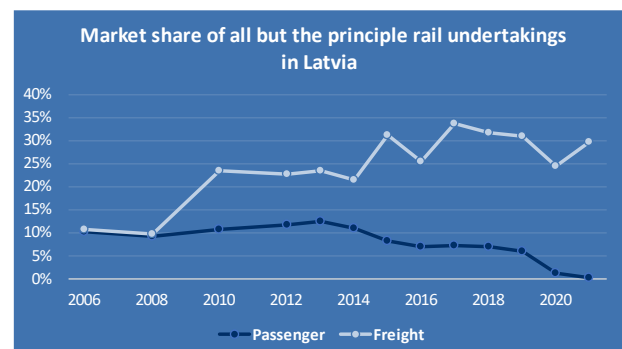
In Latvia, the infrastructure manager is separate from the rail service operators.

The domestic markets for freight and passenger rail transport are open for competition, but only a few operators are active on the Latvian market.

For many companies, the difference in track gauges represents an obstacle to market access.

Approximately 37% of all transported freight carried by railway is international freight transit. Latvia's high railway-share of tonne-km in freight transport is mainly due to high transit volumes.

Following Russia's war of aggression against Ukraine, there has been a significant decrease of freight volumes.



Source: European Commission, EU Transport in Figures Statistical Pocketbook 2023

¹⁹¹ European Commission, Joint Research Centre. Calculations based on TomTom data.

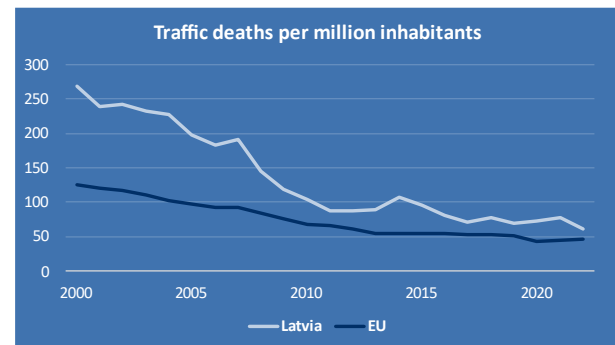
¹⁹² European Commission, EU Transport in Figures. Statistical Pocketbook 2023.

Road safety

Latvia is 23rd out of 27 EU countries in terms of the lowest numbers of fatalities per million inhabitants.

Compared to the EU average, the distribution of fatalities in Latvia shows a relatively high proportion of pedestrians and fatalities that occurred on rural roads.

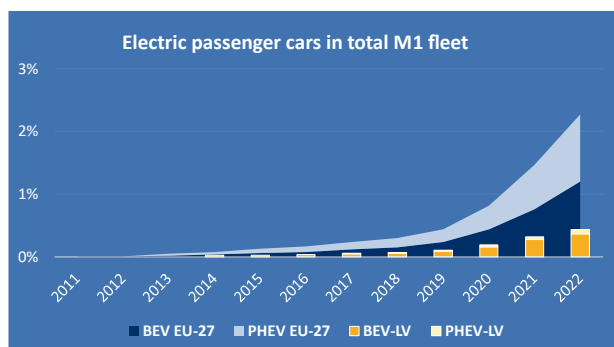
The proportion of powered two-wheelers on the other hand is much smaller than the EU average¹⁹³.



Source: Eurostat: Person killed in road accidents & Eurostat: Population change. Own calculations.

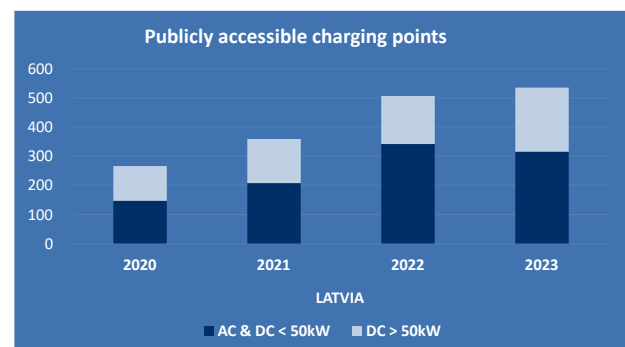
Alternative fuels in road transport

The uptake of alternative fuels in road transport is very low even though the share of electric passenger cars (M1) in Latvia has been increasing over the past six to seven years.



Source: European Alternative Fuels Observatory. BEV = battery electric vehicle, PHEV = plug-in hybrid electric vehicle

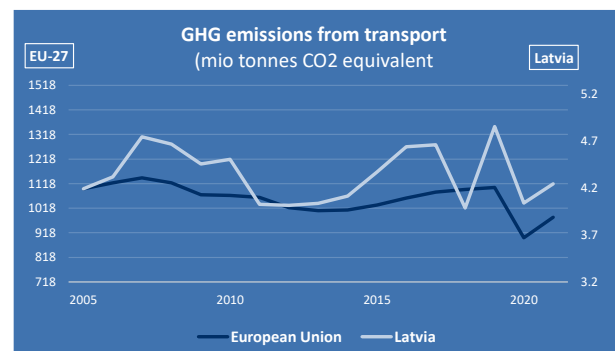
The deployment of publicly accessible charging infrastructure has also been improving slowly since 2020 but remains limited. End 2022 there were **8 electric vehicles per charging point** (EU average: 10).



Source: European Alternative Fuels Observatory

Greenhouse gas (GHG) emissions from transport

GHG emissions from the Latvian transport sector have overall been following the general EU trend over the past 15 years.



Source: European Commission: EU Transport in Figures Statistical Pocketbook 2023 - including international bunkers

¹⁹³ European Road Safety Observatory. National Road Safety Profile - Latvia (2023).

5.15. Lithuania

Strategic aspects for the transport sector

TEN-T network



Legend:

✈ Airports
 ⚓ Ports
 ● Rail-Road terminals
 ● Inland waterways
 — Railways
 — Roads

Corridors: — North-South

Source: TENtec

The **airport** of Vilnius ranked 74th in the EU in terms of passengers carried in 2022¹⁹⁴.

When taking loaded and unloaded tonnes as a reference, Lithuania's largest **seaport for freight**, Klaipėda ranked 17th in the EU in 2021¹⁹⁵.

¹⁹⁴ Eurostat. Air passenger transport by main airports in each reporting country (departing, arriving & transit).

¹⁹⁵ Eurostat. Gross weight of goods handled in all ports by direction.

Transport in the Recovery and Resilience Plan for Lithuania¹⁹⁶

The Lithuanian Recovery and Resilience Plan consists of **EUR 2.2 billion** in RRF grants (no loans). The plan supports the green transition of the transport sector through EUR 347 million investments in sustainable mobility.

Key measures cover support for the replacement of polluting road transport vehicles used by the public sector and businesses into zero-emission and low-emission vehicles, to improve the quality and attractiveness of public transport services, to establish charging/refilling infrastructure for all

types of clean vehicles using alternative fuels, and to develop the alternative fuels sector (biomethane, secure generation liquid biofuels, hydrogen).

The plan also supports the digitalisation of the transport sector with EUR 73.5 million investments for the 5G transition, which could enable mobility innovations (autonomous transport, drones, ...). EUR 3.8 million are aimed at developing the electronic document ecosystem, with the implementation of the eFTI¹⁹⁷ Regulation.

Transport in the European Semester for Lithuania since 2021

2022: Country-specific recommendation to 'reduce overall reliance on fossil fuels by accelerating the deployment of renewables, increasing energy efficiency and decarbonisation of industry, transport, and buildings [...].'

2023: Country-specific recommendation to 'further reduce reliance on fossil fuels and imported energy by accelerating the deployment of renewables, [...] increasing the uptake of public and sustainable transport [...].'

Transport in the national energy and climate plan (final version 2019)¹⁹⁸

Greenhouse gas emissions and removals:

- Binding 2030 non-EIS greenhouse gas emission target compared to 2005: -9%.
- No indicative target in the transport sector.

Lithuania plans efficiency gains in the vehicle fleet and in the transport system: increased use of alternative fuels (including biomethane and liquefied natural gas (LNG)), innovative transport technologies, as well as electrification of railways and taxation based on the polluter-pays principle. Electromobility and the underpinning charging infrastructure is supported by purchase incentives and public procurement. The concrete status of the targets for 2030 as presented in the scenario analysis in the plan is not clear. Over 46 000 electric vehicles are expected by 2025. Plans for supporting LNG use in road and maritime transport are also mentioned, as well as financial support for biomethane use in transport, and blending obligations for biomethane.

The plan mentions measures that contribute to more efficient organisation of the mobility system and thus towards improved energy efficiency and

emissions reductions, e.g. investments in infrastructure incentives for the use of combined freight transport, sustainable urban mobility plans.

Renewable energy:

- Target for renewable energy in gross final consumption of energy by 2030: 45%.
- Expected renewables share in 2030 in the transport sector: **15%**.

The strategy for reaching the target of 15% renewables in transport by 2030 is based on diversification of fuels and integration of alternative fuels by reducing dependence on imported fossil fuels. However, the 2020 target of 10% will be missed by approximately 5 pp.

Contribution to EU's 2030 energy efficiency target:

- Primary energy: 5.5 Mtoe
- Final energy consumption: 4.3 Mtoe

The plan includes measures targeting mainly the building and transport sectors, as well as the industry sector. Energy savings are expected from various excise duties applicable to fuels.

¹⁹⁶ European Commission. Analysis of the recovery and resilience plan of Lithuania.

¹⁹⁷ eFTI: electronic freight transport information.

¹⁹⁸ European Commission. Commission assessment of the final NECP for Lithuania.

Facts and figures on transport in Lithuania

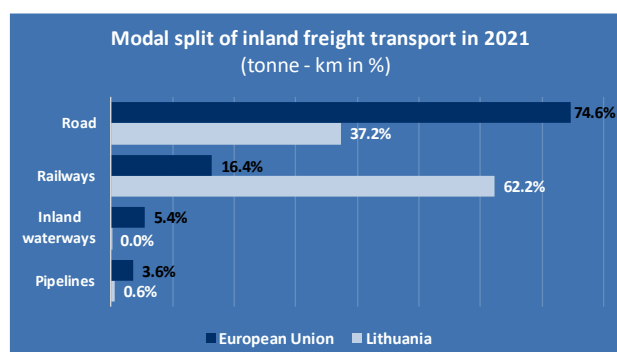
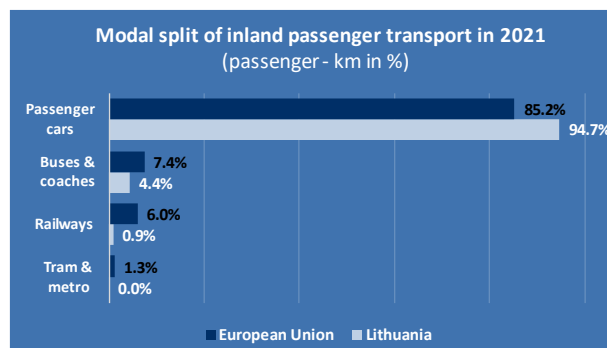
Modal split

In 2021, cars were the predominant passenger transport mode in Lithuania and their share in passenger transport was above the EU average. The share of railways for passenger traffic is significantly below the EU average. There is no train and metro transport in Lithuania.

In freight transport, the share of road transport in Lithuania was far below the EU average in 2021. On the other hand, railways have the highest market share for freight transport and are far above the EU average. The inland waterways do not play any role for freight transport in Lithuania.

Peak-hour delay per road vehicle driver in 2023 was **23.1 hours** (EU-average: 28.6 hours)¹⁹⁹.

In 2021, **8% of the Lithuanian rail network was electrified** (EU-average: 56%)²⁰⁰.

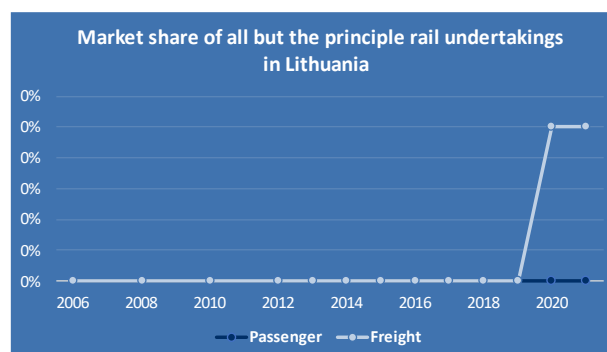


Source: European Commission, EU Transport in Figures Statistical Pocketbook 2023

Market opening in the railway sector

Obstacles to the efficient functioning of the internal rail market persist, and competition in the rail sector is limited despite an, in theory, opened rail market. Lithuania needs to strengthen the efforts to use open tenders in awarding public services contracts in rail if it wants to find new rail passenger market entrants.

Rail freight traffic is largely dominated by East-West flows while the North-South axis is underdeveloped.



Source: European Commission, EU Transport in Figures Statistical Pocketbook 2023

¹⁹⁹ European Commission, Joint Research Centre. Calculations based on TomTom data.

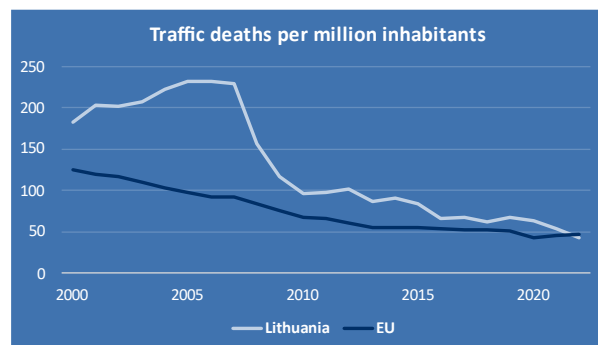
²⁰⁰ European Commission, EU Transport in Figures. Statistical Pocketbook 2023.

Road safety

Lithuania is 12th out of 27 EU countries in terms of the lowest numbers of fatalities per million inhabitants.

Compared to the EU average, the distribution of fatalities shows a relatively high proportion of pedestrians. The proportion of powered two-wheelers on the other hand is smaller than the EU average.

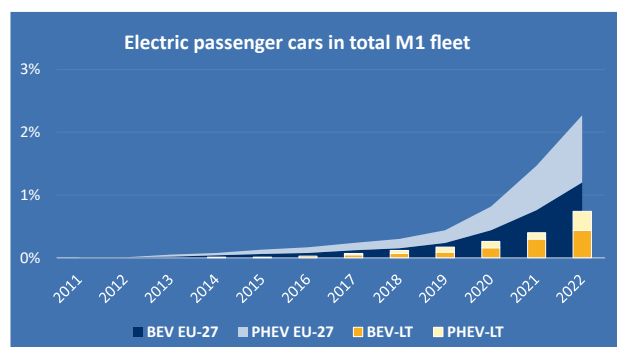
Over the past ten years the number of fatalities decreased faster than for the EU average²⁰¹.



Source: Eurostat 'Person killed in road accidents' & Eurostat 'Population change' Own calculations.

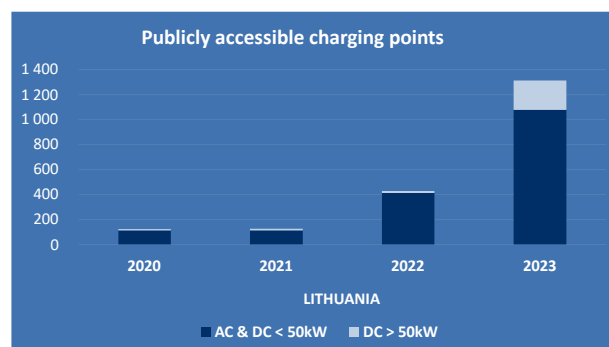
Alternative fuels in road transport

The uptake of alternative fuels in road transport is low. The share of electric passenger cars (M1) in Lithuania has been slowly increasing over the past six to seven years.



Source: European Alternative Fuels Observatory. BEV = battery electric vehicle, PHEV = plug-in hybrid electric vehicle

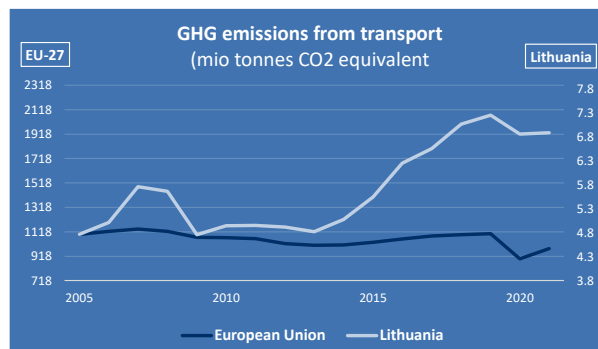
The deployment of publicly accessible charging infrastructure have accelerated since 2021, but fast charging points are still rare. End 2022 there were **11 electric vehicles per charging point** (EU average: 10).



Source: European Alternative Fuels Observatory

Greenhouse gas (GHG) emissions from transport

GHG emissions from the Lithuanian transport sector have been increasing over the past 15 years, as opposed to the general EU trend.



Source: European Commission 'EU Transport in Figures Statistical Pocketbook 2023' including international bunkers

²⁰¹ European Road Safety Observatory. National Road Safety Profile - Lithuania (2023).

5.16. Luxembourg

Strategic aspects for the transport sector

TEN-T network



Legend:

Airports
 Ports
 Rail-Road terminals
 Inland waterways
 Railways
 Roads

Corridors: North Sea - Rhine - Mediterranean

Source: TENtec

The **airport** of Luxembourg ranked 72nd in the EU in terms of passengers carried and 5th in terms of freight tonnes carried in 2022²⁰².

As a landlocked country, Luxembourg only relies on river ports for waterborne transport.

²⁰² Eurostat. Air passenger transport by main airports in each reporting country (departing, arriving & transit).

Transport in the Recovery and Resilience Plan for Luxembourg²⁰³

The Luxembourgish Recovery and Resilience Plan consists of **EUR 88.4 million** of which 82.7 million in RRF grants and 5.7 million in national resources (no loans). The plan supports the green transition of the transport sector through EUR 50.5 million investments in decarbonisation.

The reform aims to support rapid electrification of the road vehicle fleet and public transport, and an aid scheme in favour of the rollout of charging infrastructure.

Transport in the European Semester for Luxembourg since 2021

2022 & 2023: Country-specific recommendation to "reduce reliance on fossil fuels [...]. Further

promote electrification of transport and invest in public transport networks and infrastructure [...]."

Transport in the national energy and climate plan (final version 2019)²⁰⁴

Greenhouse gas emissions and removals:

- Binding 2030 non-EHS greenhouse gas emission target compared to 2005: **-40%**.
- Indicative 2030 target in the transport sector compared to 2005: **-55%**.

The largest share in terms of non-EHS emissions in Luxembourg comes from fuel sales. A large part of the fuel sold comes from vehicles registered abroad. The final plan identifies a broad range of measures in this area including support schemes to reduce ferry traffic, urban mobility planning and demand-management measures, promotion of public transport and fiscal measures to promote zero- and low-emission vehicles.

As part of a long-term national mobility plan, the government adopted the sustainable mobility strategy 'MuDu 20' on 25 May 2018. The strategic objective for 2025 is to improve the flow of traffic at peak times, with 20% more passengers to be transported than in 2017.

By 2030, the share of electric and plug-in hybrid vehicles in the existing fleet is expected to reach 49 %. Electromobility and the underpinning charging infrastructure is supported by tax incentives and public investments in infrastructure and public transport fleets. A target of 45% for electric and plug-in vehicles is set for 2030. As a key measure supporting alternative fuels, Luxembourg plans to introduce a minimum carbon price from 2021 that will be part of a tax reform. The tax will apply to fossil fuels (diesel, petrol, fuel oil & gas). The revenue generated (around EUR

150 million) will be distributed between concrete measures to combat climate change, fiscal measures (e.g. tax credit) and social measures. The planned carbon pricing and the increase in excise duties on diesel and petrol should lead to a gradual reduction in the fuel price gap between Luxembourg and the neighbouring countries.

Renewable energy:

- Target for renewable energy in gross final consumption of energy by 2030: **25%**
- Expected renewables share in 2030 in the transport sector **25.6%**.

Luxembourg mainly refers to the role of biofuels and includes the contributions of eligible fuels, as well as the limits for conventional fuel produced from food and feed crops. The key measures are the development of a comprehensive strategy for the use of sustainable biofuels, systematic additions of second-generation biofuels, development of electromobility, and production together with the deployment of a European network of 'green' hydrogen filling stations.

Contribution to EU's 2030 energy efficiency target:

- Final energy consumption: **4.5 Mtoe**

The plan provides information on measures beyond 2020 targeting mainly buildings, industry, and transport sectors. Cross-cutting policies such as taxation are to play a key role with 6.1TWh energy savings expected to be achieved from various excise duties applicable to fuels.

²⁰³ European Commission. Analysis of the recovery and resilience plan of Luxembourg.

²⁰⁴ European Commission. Commission assessment of the final NECP for Luxembourg.

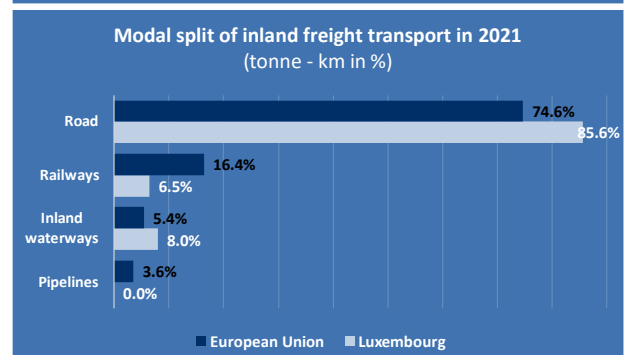
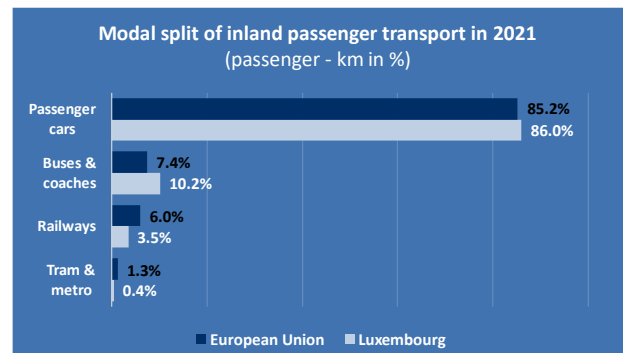
Facts and figures on transport in Luxembourg

Modal split

The modal split for both passenger and freight transport shows a clear preference for road transport over railways, trams, and metro, even more when compared to the EU average. On the other hand, Luxembourg has a relatively important share of inland waterways in its freight transport modal split.

Peak-hour delay per road vehicle driver in 2023 was **37 hours** (EU-average: 28.6 hours)²⁰⁵.

In 2021, **97% of the Luxembourg rail network was electrified** (EU-average: 56%)²⁰⁶.

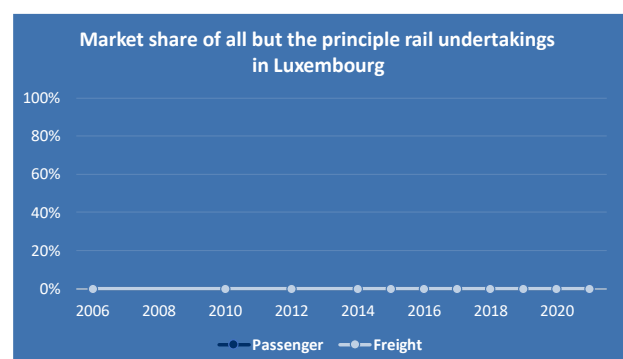


Source: European Commission: EU Transport in Figures Statistical Pocketbook 2023

Market opening in the railway sector

Next to running passenger and freight trains, the national rail operator Société Nationale des Chemins de Fer luxembourgeois (CFL) is also entrusted with the role of infrastructure manager. Luxembourg is one of the countries where an integrated infrastructure manager works alongside an independent body in charge of capacity allocation. The Institut Luxembourgeois de Régulation (ILR) is the independent national regulatory body for the railway sector. It ensures that there is no discrimination between railway undertakings and that there is effective competition in the network. Any applicant wishing to do so may bring a matter before the ILR if it considers having been unfairly treated, discriminated against, or has suffered from any other prejudice.

Whereas international train connections are generally operated by foreign rail companies, the CFL controls 100% of the domestic traffic.



Source: European Commission: EU Transport in Figures Statistical Pocketbook 2023

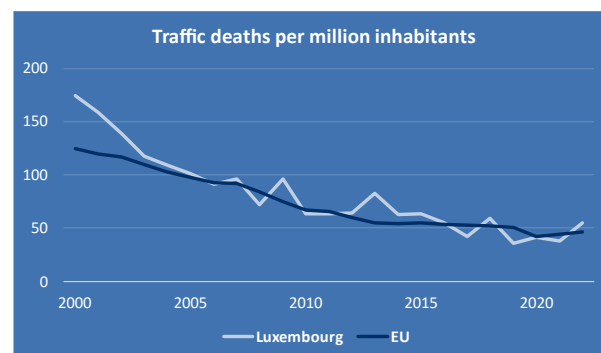
²⁰⁵ European Commission. Joint Research Centre. Calculations based on TomTom data.

²⁰⁶ European Commission. EU Transport in Figures. Statistical Pocketbook 2023.

Road safety

Luxembourg is 20th out of 27 EU countries in terms of the lowest numbers of fatalities per million inhabitants.

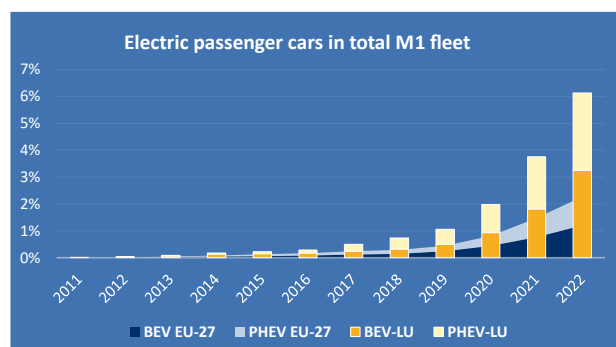
Compared to the EU average, the distribution of fatalities in Luxembourg shows a relatively high proportion of powered two-wheelers and fatalities that occur on motorways²⁰⁷.



Source: Eurostat, Person killed in road accidents & Eurostat Population change. Own calculations.

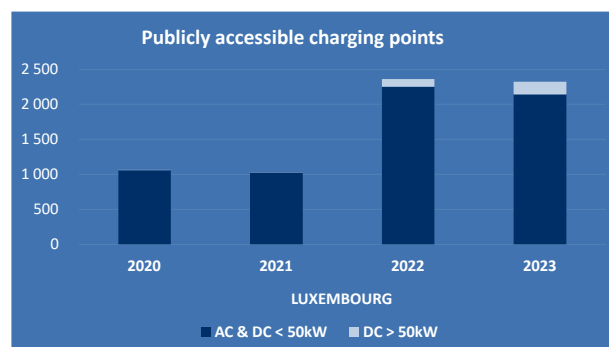
Alternative fuels in road transport

5.8% of vehicles registered in Luxembourg are powered by alternative fuels. The vast majority of these are battery electric and plug-in hybrid vehicles. Over the past 8 years, the interest in battery vehicles has been ever increasing.



Source: European Alternative Fuels Observatory. BEV = battery electric vehicle, PHEV = plug-in hybrid electric vehicle

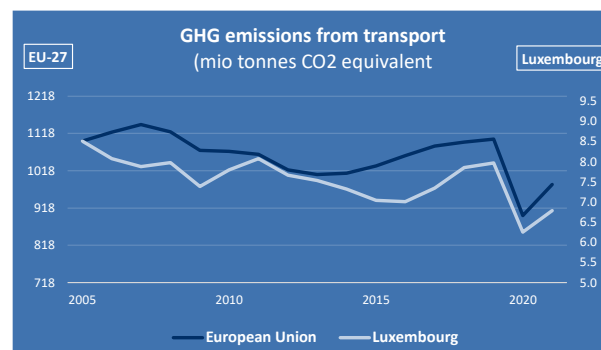
The deployment of publicly accessible charging infrastructure has improved in 2022, but the number of recharging points has decreased in 2023. In addition, fast charging points are still rare. End 2022 there were **13 electric vehicles per charging point** (EU average: 10).



Source: European Alternative Fuels Observatory

Greenhouse gas (GHG) emissions from transport

GHG emissions from the Luxembourgian transport sector have overall been decreasing faster than the general EU trend.



Source: European Commission, EU Transport in Figures Statistical Pocketbook 2023, including international bunkers

²⁰⁷ European Road Safety Observatory, National Road Safety Profile - Luxembourg (2023).

5.17. Hungary

Strategic aspects for the Transport sector

TEN-T network



Legend:



Source: TENtec

The **airport** of Budapest ranked 28th in the EU in terms of passengers carried in 2022²⁰⁸.

As a landlocked country, Hungary only relies on river ports for waterborne transport.

²⁰⁸ Eurostat. Air passenger transport by main airports in each reporting country (departing, arriving & transit).

Transport in the Recovery and Resilience Plan for Hungary²⁰⁹

The Hungarian Recovery and Resilience Plan consists of **EUR 6.038 billion** of which 5.811 billion in RRF grants and 227 million in national resources (no loans). The plan supports the green transition of the transport sector through EUR 1.414 billion investments in sustainable transport.

The investments aim to make public transport more attractive and the transport sector more sustainable through the creation of an integrated single tariff system, the improvement of the rail network, in particular in the capital region, as well as the replacement of old fossil fuel buses by electric ones.

Transport in the European Semester for Hungary since 2021

2022: Country-specific recommendation to 'reduce the dependency on fossil fuels in [...] transport by stepping up efforts on energy efficiency measures for all, especially [...] on the electrification of transport.'

2023: Country-specific recommendation to 'reduce overall reliance on fossil fuels [...].'

Transport in the national energy and climate plan (final version 2019)²¹⁰

Greenhouse gas emissions and removals:

- Binding 2030 non-EIS greenhouse gas emission target compared to 2005: -7%.
- No indicative target in the transport sector

The plan is designed to contain emissions in the transport sector by 2030, noting though that energy demand in transport (and industry) cannot be constrained in a growing economy.

Hungary's policy framework for alternative fuel infrastructure development sets out measures to develop the necessary infrastructure. Electromobility is expected to develop strongly by 2030. It is already being promoted through subsidies and tax incentives. Electromobility and charging infrastructure are supported by the electromobility act (2019), which includes financial aid to support more widespread use of electric vehicles. The 'green economy financing scheme' funds additional electromobility programmes. The energy and climate plan (NECP) also looks at promoting public transport and freight transport by rail. A 'green bus' programme (already adopted) is designed to shift local public transport to low-carbon vehicles, while still allowing the use of (compressed) natural gas.

The NECP sets the objective of ensuring that the consumption of petroleum products in transport does not increase by more than 10% by 2030.

Renewable energy:

- Target for renewable energy in gross final consumption of energy by 2030: 21%
- Expected renewables share in 2030 in the transport sector: **14%**.

The final energy consumption of transport by 2030 is expected to be 50% from first-generation biofuels and 25% each from advanced biofuels and biogas respectively. Renewables in transport are supported through a package of measures for first- and second-generation biofuels, electromobility, and green public and freight transport. First-generation biofuels will be kept at 7%, while the share of second-generation biofuels will be raised to 3.5% by 2030. These will be complemented by measures including the expansion of electric vehicles, green public transport, green public procurement, alternative energy freight transport, financial support and tax benefits and the expansion of charging points.

Contribution to EU's 2030 energy efficiency target:

- Primary energy: 30.7 Mtoe
- Final energy consumption: 18.8 Mtoe

The new measures in the transport sector combine economic incentives for energy-efficient vehicles with regulatory requirements and information and education measures.

²⁰⁹ European Commission. Analysis of the recovery and resilience plan of Hungary.

²¹⁰ European Commission. Commission assessment of the final NECP for Hungary.

Facts and figures on transport in Hungary

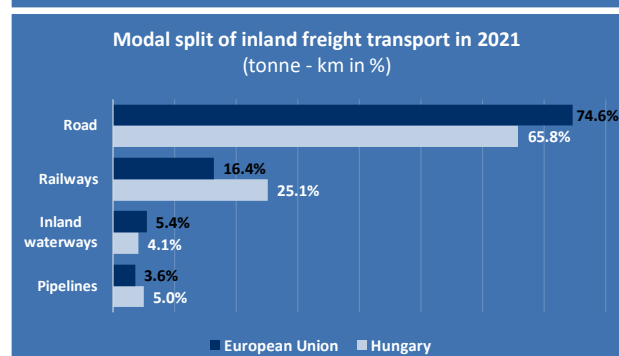
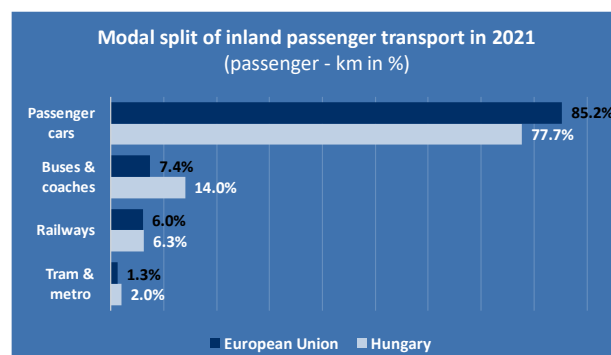
Modal split

The use of buses and coaches in Hungary is almost twice as high as the EU average with railways and train & metro use is also above the EU average.

For land freight transport, road covers only 56% of the activity, significantly below the EU average. A difference of 9 percentage points can be seen in the higher share of railways in Hungary compared to the EU average, while inland waterway transport is slightly below the EU average.

Peak-hour delay per road vehicle driver in 2023 was **29.6 hours** (EU-average: 28.6 hours)²¹¹.

In 2021, **41% of the Hungarian rail network was electrified** (EU-average: 56%)²¹².

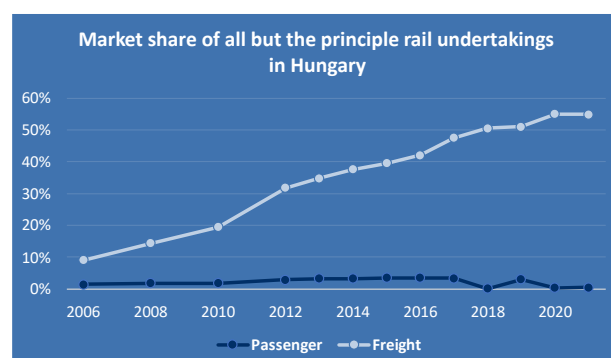


Source: European Commission, EU Transport in Figures Statistical Pocketbook 2023

Market opening in the railway sector

The incumbent passenger rail operator, MÁV Start, a subsidiary of the rail infrastructure manager MÁV, faces almost no competition from other railway undertakings.

By contrast, in the rail freight segment, liberalisation has progressed significantly in the past ten years: the market share of competitors to the incumbent rail freight undertaking, Rail Cargo Hungaria (a former subsidiary of MÁV now 100% owned by Rail Cargo Austria), now exceeds 50%.



Source: European Commission, EU Transport in Figures Statistical Pocketbook 2023

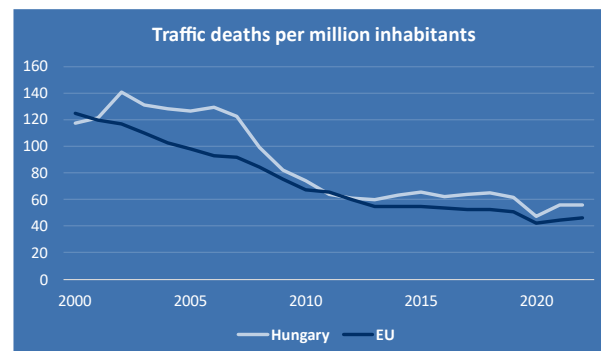
²¹¹ European Commission, Joint Research Centre. Calculations based on TomTom data.

²¹² European Commission, EU Transport in Figures. Statistical Pocketbook 2023.

Road safety

Hungary is 21st out of 27 EU countries in terms of the lowest numbers of fatalities per million inhabitants. Prior to 2009 the mortality rate in Hungary was much higher than the EU average.

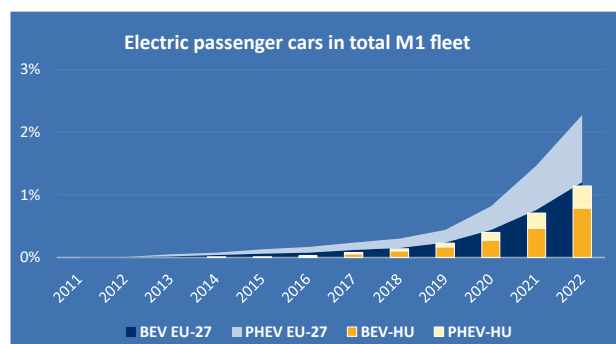
Compared to the EU average, the distribution of fatalities in Hungary shows a relatively high proportion of pedestrian fatalities²¹³.



Source: Eurostat, Person killed in road accidents & Eurostat, Population change. Own calculations.

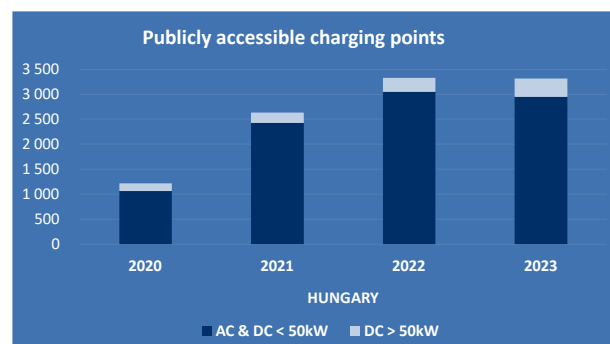
Alternative fuels in road transport

The share of electric passenger cars (M1) in Hungary has been increasing steadily over the past six to seven years.



Source: European Alternative Fuels Observatory. BEV = battery electric vehicle, PHEV = plug-in hybrid electric vehicle

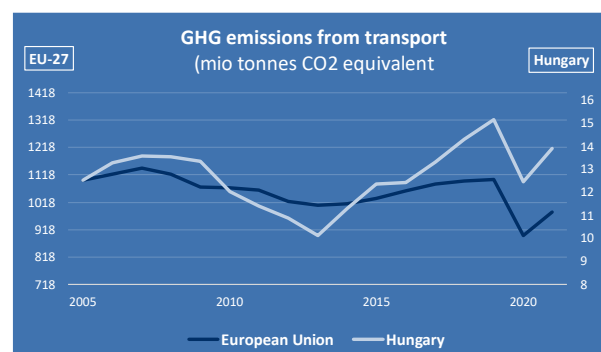
The deployment of publicly accessible charging infrastructure seems to have reached a ceiling. End 2022, there were **9 electric vehicles per charging point** (EU average: 10).



Source: European Alternative Fuels Observatory

Greenhouse gas (GHG) emissions from transport

GHG emissions from the Hungarian transport sector have been generally increasing since 2015.



Source: European Commission, EU Transport in Figures Statistical Pocketbook 2023, including international bunkers

²¹³ European Road Safety Observatory, National Road Safety Profile - Hungary (2023).

5.18. Malta

Strategic aspects for the transport sector

TEN-T network



Legend:

-  Airports
 -  Ports
 -  Rail-Road terminals
 -  Inland waterways
 -  Railways
 -  Roads
- Corridors:**  Scaevaggio line - Mediterranean

Source: TEN-Tec

The **airport** of Malta ranked 57th in the EU in terms of passengers carried in 2022²¹⁴.

When taking loaded and unloaded tonnes as a reference, Malta's largest **seaport for freight**, Marsaxlokk, ranked 185th in the EU in 2021²¹⁵.

²¹⁴ Eurostat. Air passenger transport by main airports in each reporting country (departing, arriving & transit).

²¹⁵ Eurostat. Gross weight of goods handled in all ports by direction.

Transport in the Recovery and Resilience Plan for Malta²¹⁶

The Maltese Recovery and Resilience Plan consists of **EUR 336 million** of which 328 million in RRF grants and 8 million in national resources (no loans). The plan supports the green transition of the transport sector through EUR 110 million investments to decarbonise transports.

The objective is to shift traffic from road to more sustainable modes and decarbonise road transport through electrification, in line with Malta's national energy and climate plan for 2050. Planned reforms improve transport planning, increase the

use of public transport, and implement measures in the Sustainable Urban Mobility Plan for the Valletta region. They also designate regeneration areas, promote remote working in the public sector and increase the efficiency of the public sector vehicle fleet. Investments include the construction of a ferry landing site, a scrappage scheme supporting the purchase of zero-emission electric vehicles in the private sector, renewal of the public sector vehicle fleet with zero-emission electric vehicles and the purchase of zero-emission electric buses for public transport.

Transport in the European Semester for Malta since 2021

2022 & 2023: Country-specific recommendation to 'reduce emissions from road transport by addressing traffic congestion through improved

service quality in public transport, intelligent transport systems and investing in soft mobility infrastructure.'

Transport in the national energy and climate plan (final version 2019)²¹⁷

Greenhouse gas emissions and removals:

- Binding 2050 non-EIS greenhouse gas emission target compared to 2005: -19%.
- No indicative target in the transport sector.

By far the largest non-EIS sector is transport, accounting in 2017 for 38.97% of all CO₂ emissions. A good overview of measures to support public transport, car sharing, and other means of transport, alternative fuels and multimodality is provided. Electromobility is being supported via investments in charging infrastructure and other means such as tax expenditures and subsidies.

The plan also outlines improvements in maritime transport and ferry landing sites (e.g. inter-harbour ferries Malta-Siudy link) and future plans such as exploring hydrogen fuel cell technology in the sector. The plan does not clearly note the impact of specific measures on emissions.

In the transport sector, the NECP provides a good overview of existing measures to improve energy

efficiency. However, some information on measures related to intelligent transport systems, digitalisation and automation is missing.

Renewable energy:

- Target for renewable energy in gross final consumption of energy by 2050: 11.5%
- Expected renewables share in 2050 in the transport sector **14%**.

Malta intends to reach its renewable transport objective via the implementation of an obligation on fuel suppliers to blend biofuels with diesel.

Contribution to EU's 2050 energy efficiency target:

- Primary energy: 1.1 Mtoe
- Final energy consumption: 0.8 Mtoe

The plan provides descriptive information on policies and measures beyond 2020 targeting mainly buildings and transport sectors, as well as industry sector.

²¹⁶ European Commission. Analysis of the recovery and resilience plan of Malta.

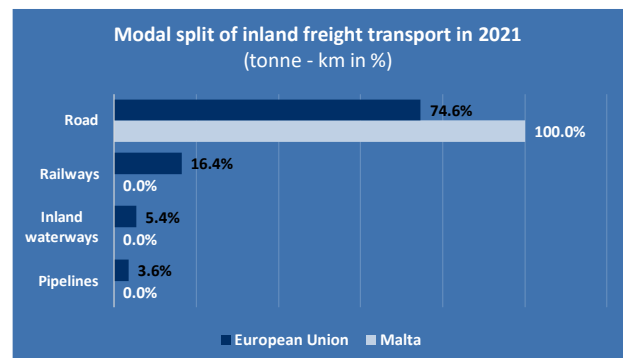
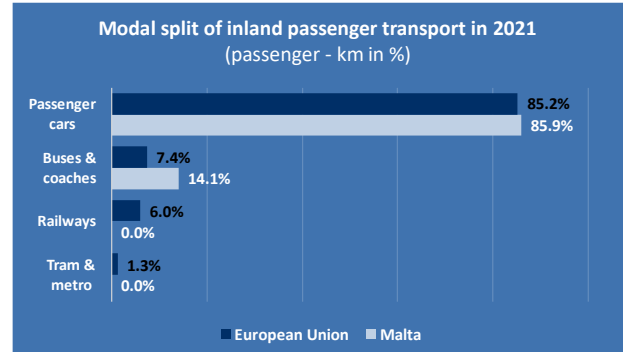
²¹⁷ European Commission. Commission assessment of the final NECP for Malta.

Facts and figures on transport in Malta

Modal split

Road transport is the only mode of land transport available in Malta. The share of passenger cars in the modal split is comparable to the EU-average and buses and coaches transport cover a much larger share than the EU average.

Peak-hour delay per road vehicle driver in 2023 was **83.9 hours**, the highest value in the EU (EU-average: 28.6 hours)²¹⁸.

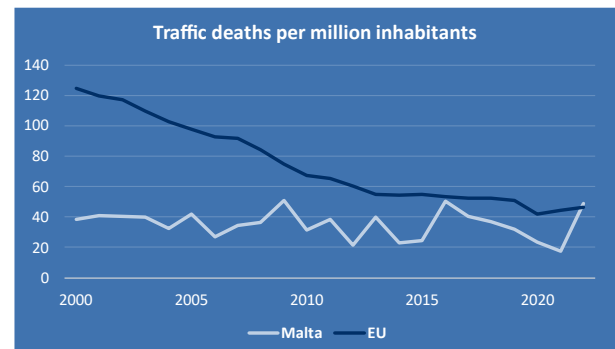


Source: European Commission: EU Transport in Figures. Statistical Pocketbook 2023.

Road safety

Malta is 15th out of 27 EU countries in terms of the lowest number of fatalities per million inhabitants.

Statistical normalisation can be unreliable due to the small sample size in Malta²¹⁹.



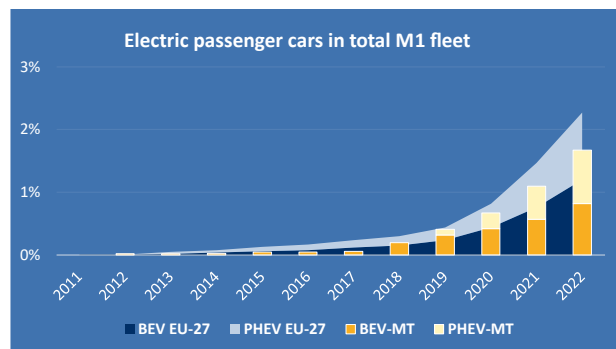
Source: European Commission: EU Transport in Figures. Statistical Pocketbook 2023.

²¹⁸ European Commission. Joint Research Centre. Calculations based on TomTom data.

²¹⁹ European Road Safety Observatory. National Road Safety Profile - Malta (2023).

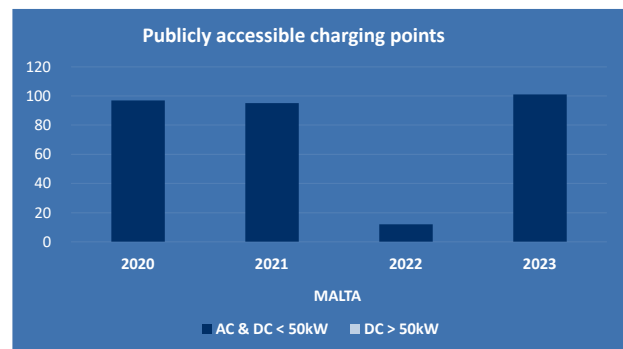
Alternative fuels in road transport

2% of vehicles registered in Malta are powered by alternative fuels. Battery electric, plug-in hybrid and LPG are the most popular alternative fuels. The share of electric passenger cars (M1) in Malta has been increasing over the past six to seven years but no significant growth was observed since 2020.



Source: European Alternative Fuels Observatory. BEV = battery electric vehicle, PHEV = plug-in hybrid electric vehicle

The deployment of publicly accessible charging infrastructure has not been keeping pace with the new vehicles on the roads. End 2022 there were **57 electric vehicles per charging point**, above the EU average of 10, which might be a challenge for owners not having access to private charging opportunities.

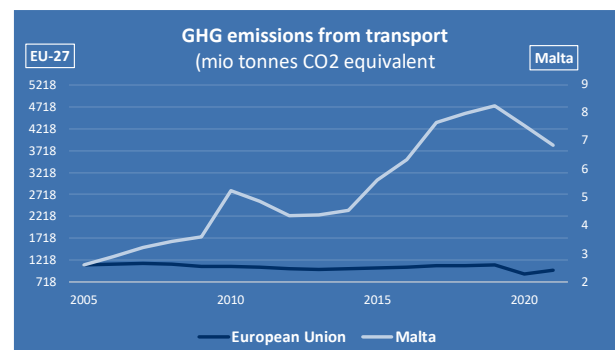


Source: European Alternative Fuels Observatory

Greenhouse gas (GHG) emissions from transport

GHG emissions from the Maltese transport sector have been highly increasing over the past 15 years, as opposed to the general EU trend.

In 2021, considering international bunkers, the lion share of Maltese transport GHG emissions came from waterborne transport (89% vs. EU-average of 15%), whereas in most other EU countries road is the principal source²²⁰.



Source: European Commission. EU Transport in Figures. Statistical Pocketbook 2023. Including international bunkers

²²⁰ European Commission. EU Transport in Figures. Statistical Pocketbook 2023.

5.19. Netherlands

Strategic aspects for the transport sector

TEN-T network



Legend:

Airports
 Ports
 Rail-Road terminals
 Inland waterways
 Railways
 Roads

Corridors:
 North Sea-Baltic
 North Sea-Mediterranean

Source: TENtec

The **airport** of Amsterdam ranked 2nd in the EU in terms of passengers carried in 2022²²¹.

When taking loaded and unloaded tonnes as a reference, the Netherlands had three major **seaports for freight** ranking amongst the 20 busiest in the EU in 2021: Rotterdam (1st), Amsterdam (4th) and Zeeland Seaport (20th)²²².

²²¹ Eurostat. Air passenger transport by main airports in each reporting country (departing, arriving & transit).

²²² Eurostat. Gross weight of goods handled in all ports by direction.

Transport in the Recovery and Resilience Plan for the Netherlands²²³

The Dutch Recovery and Resilience Plan consists of **EUR 5.435 billion** in RRF grants (no loans). The plan supports the green transition of the transport sector through EUR 418 million investments to promote the green transition and accelerate the digital transformation.

The first component (85 million for transports) aims at promoting the green transition and reducing GHG and nitrogen emissions. One of the main reforms included in the component, the Energy Law is of particular relevance for the Netherlands to be able to move to a greener economy. This reform is accompanied by fiscal reforms in the fields of energy taxation, car

taxation, industrial CO₂ emission taxation and air travel taxation, all intended to stimulate the greening of the economy. The component includes investments to move towards more sustainable transport, by supporting the transition towards cleaner technology in both air and water transport.

The second component (353 million for transports) focuses on accelerating the digital transformation. The component addresses the Dutch challenges related to transport bottlenecks by supporting investments in rail traffic (advancing the implementation of the European Rail Traffic Management System) and road traffic (improving roadside stations and smart mobility solutions).

Transport in the European Semester for the Netherlands since 2021

2022: Country-specific recommendation to 'reduce overall reliance on fossil fuels by accelerating the deployment of renewables [...] and accelerating investments in sustainable transport [...]'.²²³

2023: Country-specific recommendation to 'reduce reliance on fossil fuels by accelerating the deployment of renewables [...]'.²²⁴

Transport in the national energy and climate plan (final version 2019)²²⁴

Greenhouse gas emissions and removals:

- Binding 2050 non-EIS greenhouse gas emission target compared to 2005: **-36%**.
- Indicative 2050 target in the transport sector compared to 2018: **-11% to 18%**.

This is to be achieved by measures supporting electromobility, reducing number of work-related kilometres and making logistics more sustainable. The underlying charging infrastructure is supported by the electrification of the car fleet (financial incentives and a shift to 100% electric vehicles by 2050) and a specific agenda for electric charging stations. The plan points to a yearly reduction of 8 billion kilometres of professional road transport by 2050 (at least a 50% GHG reduction). All new cars are to be emission-free by 2050. This is to be achieved primarily by tax incentives, which are to be gradually phased out over time. The Netherlands' 2050 objective is to achieve zero emissions through incentives for alternative fuels and the promotion of sustainable fuels for heavy goods

road transport, inland shipping, maritime shipping and aviation. The plan does not provide more details on the measures for all modes and alternative fuels.

Renewable energy:

- Target for renewable energy in gross final consumption of energy by 2050: **27-32%**.
- Expected renewables share in 2050 in the transport sector: **32%**.

Some measures are developed, such as a subsidy for demonstrating climate and energy innovations and support subsidies for renewables. The Commission considers them sufficient to help achieving the target.

Contribution to EU's 2050 energy efficiency target:

- Primary energy: **46.6 Mtoe**
- Final energy consumption: **43.9 Mtoe**

²²³ European Commission. Analysis of the recovery and resilience plan of the Netherlands.

²²⁴ European Commission. Commission assessment of the final NECP for the Netherlands.

Facts and figures on transport in the Netherlands

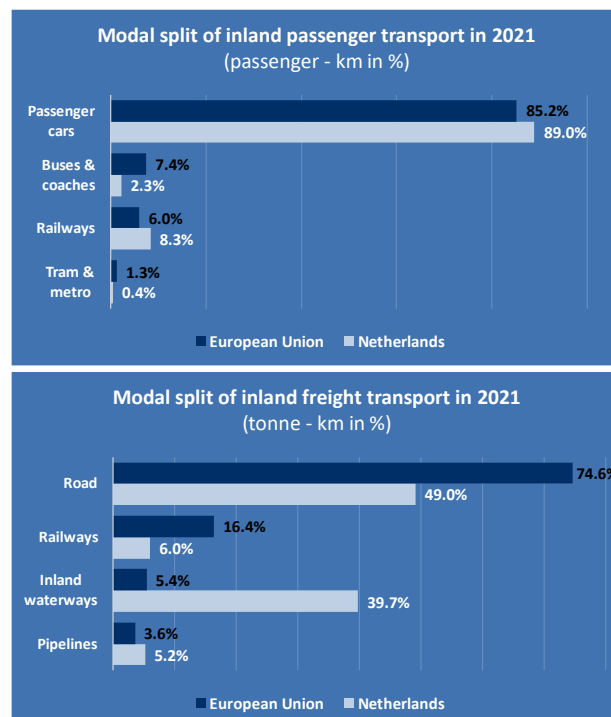
Modal split

Cars have a higher share in the modal split for passenger transport than the EU average, whereas buses, trams and metros have a much lower share. Bicycles are not covered by these figures. Yet, the relatively high share of passenger cars hints at a contributing factor to congestion problems.

Peak-hour delay per road vehicle driver in 2023 was **32.8 hours** (EU-average: 28.6 hours)²²⁵.

For freight, the dominant transport modes in the Netherlands are road and inland waterways (which has a much higher share than the EU average).

In 2021, **74.4% of the Dutch rail network was electrified** (EU-average: 56%)²²⁶.



Source: European Commission, EU Transport in Figures Statistical Pocketbook 2023

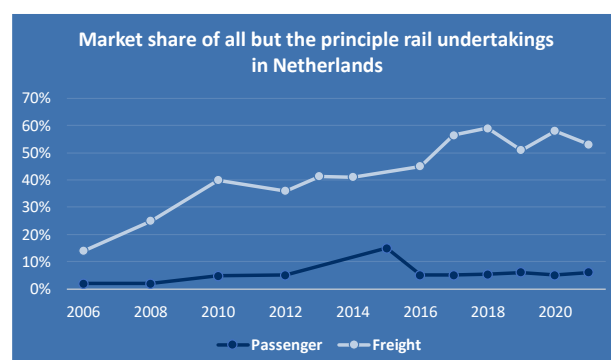
Market opening in the railway sector

The Dutch railway network is the most heavily used in Europe.²²⁷ The deployment of the European Railway Traffic Management System (ERTMS) in the Dutch railway network is ongoing to support the increase in traffic capacity.

For passenger transport, NS (Nederlandse Spoorwegen) holds an exclusive concession for passenger transport on the main network until 1 January 2026. Regional passenger services are managed by the regional authorities.

Rail freight operations are 100% liberalised.

Rail infrastructure and maintenance is financed by the Government and managed by ProRail, a company that is 100% owned by the state.



Source: European Commission, EU Transport in Figures Statistical Pocketbook 2023

²²⁵ European Commission, Joint Research Centre. Calculations based on TomTom data.

²²⁶ European Commission, EU Transport in Figures. Statistical Pocketbook 2023.

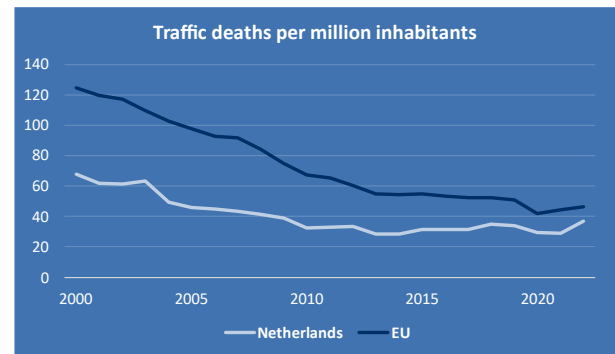
²²⁷ European Commission, Rail Market Monitoring Report 2022.

Road safety

The Netherlands is 8th out of 27 EU countries in terms of the lowest numbers of fatalities per million inhabitants. Over the past 20 years this rate has decreased slower than the EU average.

Compared to the EU average, the distribution of fatalities in the Netherlands shows a relatively high proportion of cyclists and people aged 65 and over. The proportion of pedestrians on the other hand is much smaller than the EU average.

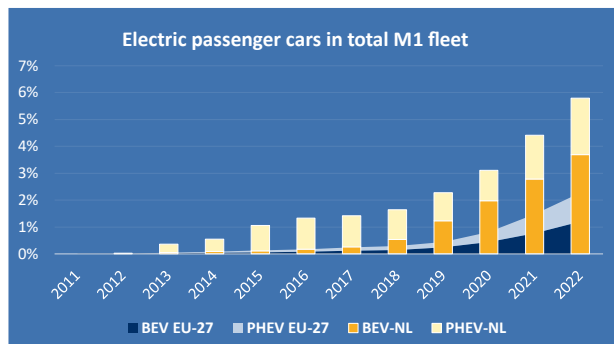
Over the past ten years there has been a strong increase in the number of fatalities among people aged 65 and over and in the number of fatalities that occur on motorways²²⁸.



Source: Eurostat, Person killed in road accidents & Eurostat Population change. Own calculations.

Alternative fuels in road transport

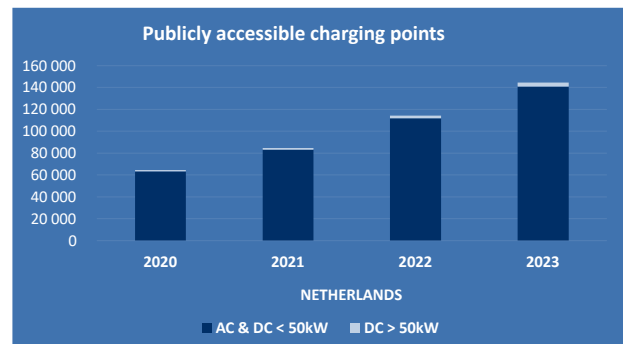
The Dutch policy on alternative fuels puts a lot of emphasis on electric vehicles. The current overall share of electric passenger cars in the total M1 fleet is already above 5%. For new registrations of electric vehicles (M1 and N1), 70.4% were BEVs, while the remaining 29.6% were PHEVs.



Source: European Alternative Fuels Observatory. BEV = battery electric vehicle, PHEV = plug-in hybrid electric vehicle

The deployment of publicly accessible charging infrastructure is going at a steady rate, but fast charging points are particularly rare.

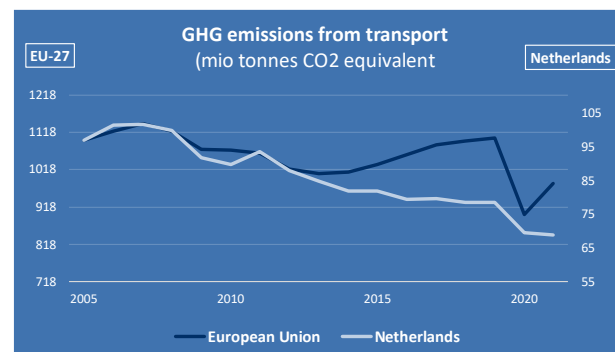
End 2022 there were **4 electric vehicles per charging points** (EU average: 10). The Netherlands had 12 H₂ refuelling points then.



Source: European Alternative Fuels Observatory

Greenhouse gas (GHG) emissions from transport

GHG emissions from the Dutch transport sector have overall been decreasing faster than the general EU trend over the past 15 years.



Source: European Commission EU Transport in Figures Statistical Pocketbook 2023 including international bunkers

²²⁸ European Road Safety Observatory. National Road Safety Profile - Netherlands (2023).

5.20. Austria

Strategic aspects for the transport sector

TEN-T network



Legend:



Source: TENtec

The **airport** of Vienna ranked 13th in the EU in terms of passengers carried in 2022²²⁹.

As a landlocked country, Austria only relies on river ports for waterborne transport.

²²⁹ Eurostat. Air passenger transport by main airports in each reporting country (departing, arriving & transit).

Transport in the Recovery and Resilience Plan for Austria²³⁰

The Austrian Recovery and Resilience Plan consists of **EUR 4.5 billion** of which 3.75 billion in RRF grants and 748 million in national resources (no loans). The plan supports the green transition of the transport sector through EUR 849 million investments in sustainable transport.

The subcomponent regarding Eco-friendly mobility contains two reforms, the 'Mobility Masterplan'

and the 'Climate Inxel' with the objective to harmonise the tariff system of public transport in Austria and make it more affordable. The subcomponent also includes three investments: 'Promoting zero-emission buses and charging infrastructure', 'Promotion of zero-emission vans and charging infrastructure' and 'Construction of new railway lines and electrification of regional railways along the Baltic-Adriatic TEN-T Corridor

Transport in the European Semester for Austria since 2021

2022: Country-specific recommendation to 'reduce overall reliance on fossil fuels [...] by accelerating the deployment of renewable energy [...] and enhancing energy efficiency [...].'

2023: Country-specific recommendation to 'reduce overall reliance on fossil fuels [...] Improve energy efficiency. Reduce emissions, in particular in the transport sector [...].'

Transport in the national energy and climate plan (final version 2019)²³¹

Greenhouse gas emissions and removals:

- Binding 2030 non-EIS greenhouse gas emission target compared to 2005: **-36%**.
- Indicative 2030 target in the transport sector compared to 2015: **-31%**.

There is a clear objective to shift the focus for new vehicle registrations towards zero-emission cars and vans by 2030. The plan identifies a broad range of regulatory, planning, and fiscal measures in this sector including i) a focus on electrification of vehicles, ii) enhanced mobility management by the public and private sector, and iii) a shift from road to rail for freight transport by 2030. However, there are no estimated reductions from the individual measures identified. Electromobility and the charging infrastructure that underpins it, supported by a package of federal measures such as specific fleet conversion targets, various fiscal measures, support infrastructure and projects for electric mobility management, is recognised as being particularly important.

Renewable energy:

- Target for renewable energy in gross final consumption of energy by 2030: **46/50%**.
- Expected renewables share in 2030 in the transport sector **14%**.

The main additional contributions will come from increased e-mobility. Austria will maintain the use of biodiesel, increase the use of biogas, and include a share of advanced biofuels. For the key policies and measures used to achieve the 46-50% renewables share, the plan puts forward specific targets for road transport electrification and biofuels, as well as for increasing rail transport.

Contribution to EU's 2030 energy efficiency target:

- Primary energy: **28.7/30.8 Mtoe**
- Final energy consumption: **25.9/26.6 Mtoe**

Austria aims to improve its contribution in terms of primary and final energy intensity by 25-30% compared to 2015.

The NECP contains a range of measures on energy efficiency of transport, including support to i) multimodality, ii) rail transport and iii) road transport electrification. The description of the role and relevance of intelligent transport management, digitalisation and automation for the energy efficiency of transport and estimates of the contribution of measures to overall transport decarbonisation could be more developed.

²³⁰ European Commission. Analysis of the recovery and resilience plan of Austria.

²³¹ European Commission. Commission assessment of the final NECP for Austria.

Facts and figures on transport in Austria

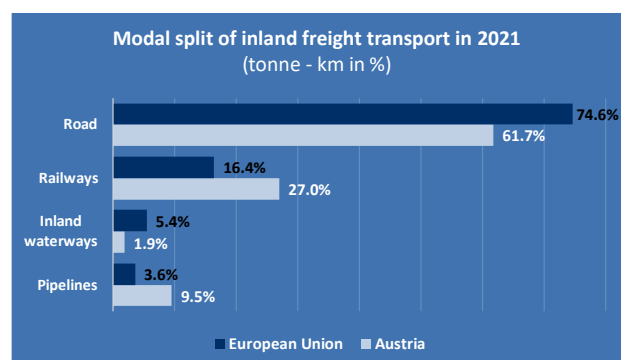
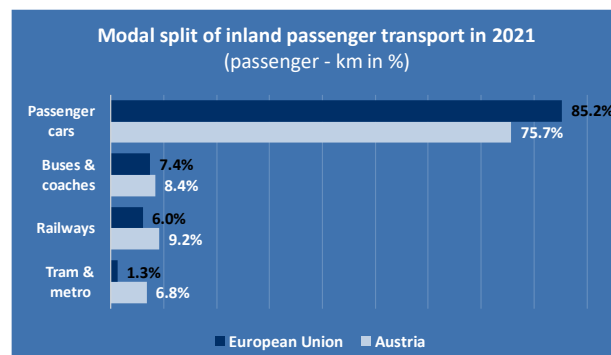
Modal split

With 9.2% in 2021, Austria had the second highest share of railways in the modal split for passenger transport among all EU countries (EU average: 6%). Railways also played an important role for freight transport in 2021 (27%). Thus, the modal split between road and rail appears to be more balanced for Austria than for the EU average.

Austria has a proactive modal shift policy: while road freight transport is being made expensive through road tolls, rail freight transport benefits from a number of subsidies, e.g., to make combined transport more attractive, to support single wagonload traffic or transport of lorries on rail (Rollende Landstraße).

Peak-hour delay per road vehicle driver in 2023 was **26.4 hours** (EU-average: 28.6 hours)²³².

In 2021, **71.4% of the Austrian rail network was electrified** (EU-average: 56%)²³³.

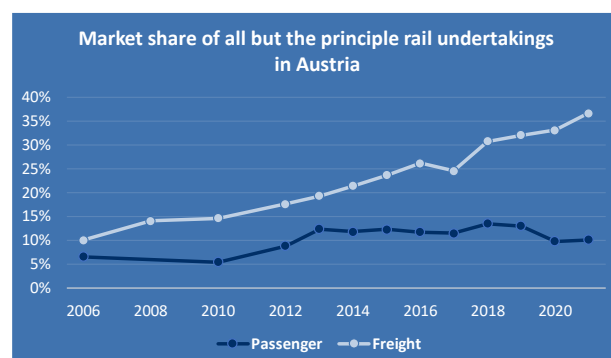


Source: European Commission, EU Transport in Figures Statistical Pocketbook 2023

Market opening in the railway sector

The rail freight market has opened up for competition to a bigger extent than the passenger sector, as the market share for all but the principal freight rail undertaking reached more than 36% in 2021, while on the passenger side it was 10%.

However, market opening has improved in the Austrian rail sector. In 2010, the market shares of all but the principal railway undertaking were 13% for freight and 5% for passenger transport.



Source: European Commission, EU Transport in Figures Statistical Pocketbook 2023

²³² European Commission, Joint Research Centre. Calculations based on TomTom data.

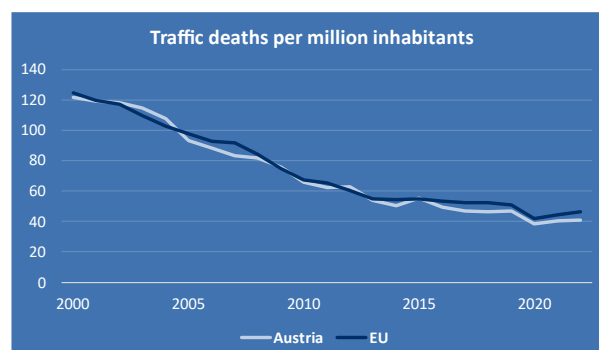
²³³ European Commission, EU Transport in Figures. Statistical Pocketbook 2023.

Road safety

Austria is 11th out of 27 EU countries in terms of numbers of fatalities per million inhabitants. Over the past twenty years this rate has decreased at the same pace as the EU average.

Compared to the EU average, the distribution of fatalities in Austria shows a relatively high proportion of fatalities that occur on rural roads.

Over the past ten years there has been an increase in the number of fatalities among powered two-wheelers, whereas the EU trend has been downward. The number of fatalities aged 85 and older on the other hand, has decreased while the number increased on average in the EU²³⁴.

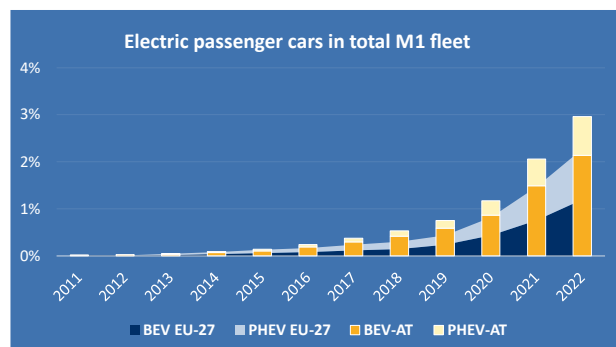


Source: Eurostat, Person killed in road accidents & Eurostat Population change. Own calculations.

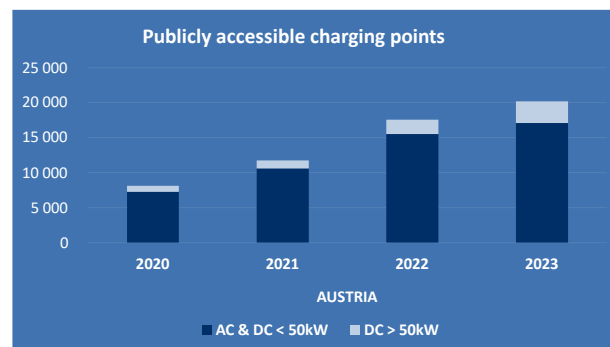
Alternative fuels in road transport

The share of electric passenger cars (M1) in Austria has been increasing dynamically over the past five years with an average annual growth rate of just under 50%. The deployment of publicly accessible charging infrastructure is also advancing at steady speed, with a relevant increase in recent years of fast recharging points.

According to EAFIO, 20 204 recharging points were deployed (in 2023) and 152 514 electric vehicles were registered of which 110 225 were battery electric (in 2022). In Austria, the growth rates of both infrastructure and electric vehicles in recent years risk to fall slightly short of what is required in view of reaching the objectives as defined in the impact assessment for the Commission proposal for an alternative fuels infrastructure regulation²³⁵.



Source: European Alternative Fuels Observatory. BEV = battery electric vehicle, PHEV = plug-in hybrid electric vehicle



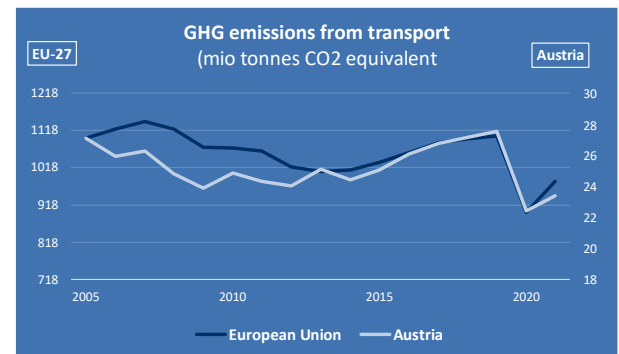
Source: European Alternative Fuels Observatory

²³⁴ European Road Safety Observatory. National Road Safety Profile - Austria (2022).

²³⁵ SWD(2021) 631.

Greenhouse gas (GHG) emissions from transport

GHG emissions from the Austrian transport sector have been following the average EU trend over the past 10 years.



Source: European Commission, EU Transport in Figures Statistical Pocketbook 2023, including international bunkers

5.21. Poland

Strategic aspects for the transport sector

TEN-T network



Legend:

Airports
 Ports
 Rail-Road terminals
 Inland waterways
 Railways
 Roads

Corridors:
 Baltic Sea – Adriatic Sea
 North Sea – Baltic
 Baltic Sea – Black Sea – Aegean Sea

Source: TENtec

The **airport** of Warsaw ranked 21st in the EU in terms of passengers carried in 2022²³⁶.

When taking loaded and unloaded tonnes as a reference, Poland's largest **seaport for freight**, Gdańsk, ranked 15th in the EU in 2021²³⁷.

²³⁶ Eurostat. Air passenger transport by main airports in each reporting country (departing, arriving & transit).

²³⁷ Eurostat. Gross weight of goods handled in all ports by direction.

Transport in the Recovery and Resilience Plan for Poland²³⁸

The Polish Recovery and Resilience Plan consists of **EUR 35.4 billion** of which 22.5 billion in RRF grants, 1.4 billion in national resources and 11.5 billion in RRF loans. The plan supports the green transition of the transport sector through EUR 7.5 billion investments in green, smart mobility.

Those investments aim to develop a sustainable, safe and resilient transport system by (i) increasing the share of zero- and low-emission transport and reducing the negative environmental impact of transport and (ii) enhancing transport accessibility, digitalisation, safety, and security.

Transport in the European Semester for Poland since 2021

2022: Country-specific recommendation to 'reduce overall reliance on fossil fuels [...]. Accelerate modal shift towards public transport and active mobility and promote faster uptake of electric vehicles with incentives and investment in charging infrastructure [...].'

2023: Country-specific recommendation to 'accelerate the phase-out of fossil fuels and the deployment of renewable energy [...]. Further promote sustainable public transport modes [...].'

Transport in the national energy and climate plan (final version 2019)²³⁹
Greenhouse gas emissions and removals:

- Binding 2030 non-EIS greenhouse gas emission target compared to 2005: -7%.
- Indicative 2030 targets in transports compared to 2021: **-37.5%** (passenger cars), **-31%** (light commercial vehicles).

Considerable investment is planned to establish an infrastructure for liquefied natural gas. Decarbonisation of the transport sector is expected through the use of alternative fuels (with conventional biofuels representing the largest share), a shift to public and low-emission transport, and other measures. They are financed by the Low-Emission Transport Fund (providing some 1.5 billion PLN over ten years).

Electric vehicles and the related charging infrastructure are supported by an Act on electromobility. Measures presented should stimulate the implementation of the specific goals at national level for 2025; the concrete status of the 2030 targets in the NECP is not clear.

Measures for other modes of transport are addressed mainly for maritime. The contribution of biofuels to reducing emissions will be supported via investment related to producing liquid biofuels, bio-components and other renewable fuels, though

the Low-Emission Transport Fund (6.7 billion PLN) over the next 10 years.

Renewable energy:

- Target for renewable energy in gross final consumption of energy by 2030: 21/23%.
- Expected renewables share in 2030 in the transport sector: **14%** (including 7% of conventional biofuels).

The key policies and measures to achieve this are the 2018 Law on electromobility and a Low-Emission Fund (2018-2027), with PLN 6.7 billion of financing. Further legislation will follow, to reach 1 million electric vehicles by 2025. However, with only 32% renewable electricity share planned for 2030, less than a third of the electricity use in transport can be counted as renewable. These policies and measures are considered insufficient for achieving the target.

Contribution to EU's 2030 energy efficiency target:

- Primary energy: 91.3 Mtoe
- Final energy consumption: 67.1 Mtoe

The plan provides descriptive information on policies and measures beyond 2020 targeting all sectors. The main focus is on transport and buildings.

²³⁸ European Commission. Analysis of the recovery and resilience plan of Poland.

²³⁹ European Commission. Commission assessment of the final NECP for Poland.

Facts and figures on transport in Poland

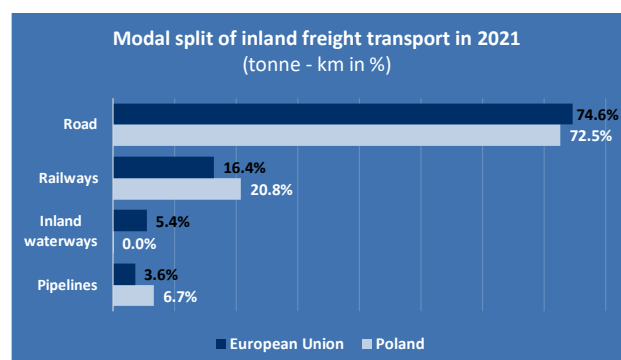
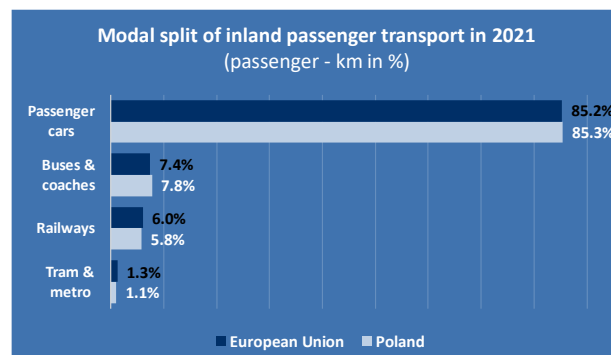
Modal split

In 2021 cars were the predominant passenger transport mode in Poland, with a share close to the EU average. The share of railways for passenger traffic has been decreasing in the past decade and in 2021 was slightly below the EU average.

In freight transport, the share of road in Poland was below the EU average in 2021. Railways, despite a constant decrease in the modal share (22.3% in 2016), continue to play an important role for freight transport and are above the EU average. Thus, the modal split between road and rail appears more balanced for Poland than for the EU average.

Peak-hour delay per road vehicle driver in 2023 was **25.4 hours** (EU-average: 28.6 hours)²⁴⁰.

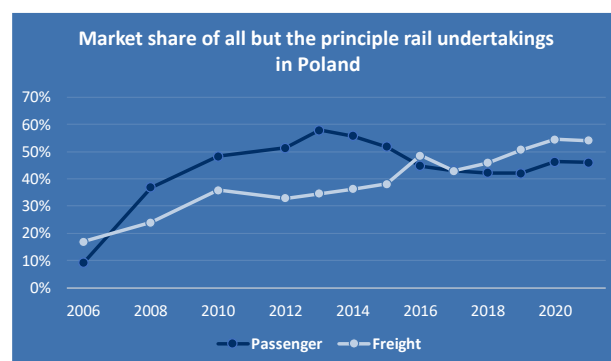
In 2021, **63% of the Polish rail network was electrified** (EU-average: 56%)²⁴¹.



Source: European Commission, EU Transport in Figures Statistical Pocketbook 2023

Market opening in the railway sector

The liberalisation process in the Polish rail market started with the Railway Transport Act in 1997 under which for the first time licensed operators were authorised to provide railway services on the Polish network. In addition, the Act provided for the obligation of separate accounting of railway and infrastructure operations.



Source: European Commission, EU Transport in Figures Statistical Pocketbook 2023

²⁴⁰ European Commission, Joint Research Centre. Calculations based on TomTom data.

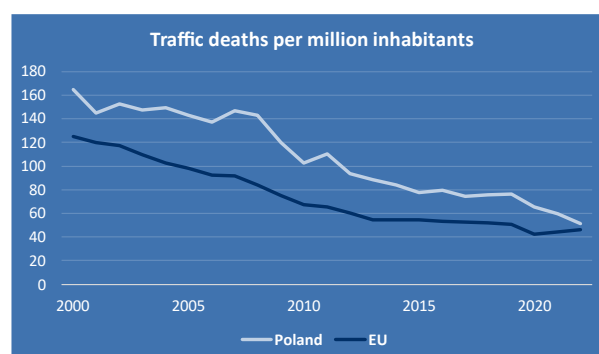
²⁴¹ European Commission, EU Transport in Figures. Statistical Pocketbook 2023.

Road safety

Poland is 18th in the EU for the lowest numbers of fatalities per million inhabitants. This rate has decreased over the past twenty years, although not enough to close the gap with the EU average.

Compared to the EU average, the distribution of fatalities in Poland shows a relatively high proportion of pedestrians and fatalities on wet roads. The proportion of senior people aged 65 and over on the other hand is much smaller.

With the large increase of motorways in Poland, there has been a strong increase in the number of fatalities on motorways over the past ten years²⁴².

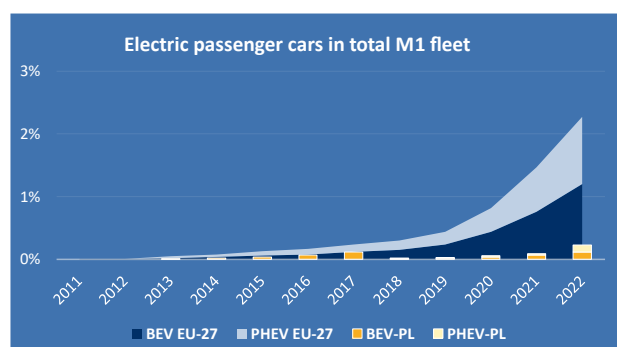


Source: Eurostat: Person killed in road accidents & Eurostat: Population change. Own calculations.

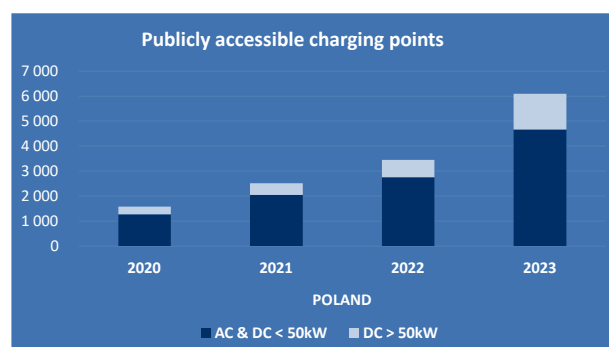
Alternative fuels in road transport

12.07% of vehicles in Poland are fuelled by alternative fuels. However, the vast majority of these vehicles are powered by LPG. Battery electric and plug-in hybrid vehicles are a small share of this total (0.12% in 2022).

The public recharging infrastructure network has been appropriately keeping pace with the rollout of fleets in the last couple of years. End 2022, there were **10 electric vehicles per charging point**, in line with the EU average.



Source: European Alternative Fuels Observatory. BEV = battery electric vehicle, PHEV = plug-in hybrid electric vehicle

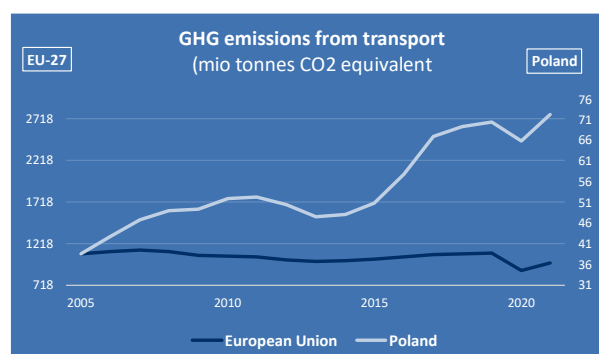


Source: European Alternative Fuels Observatory

Greenhouse gas (GHG) emissions from transport

GHG emissions from the Polish transport sector have been increasing, contrary to the average EU trend over the past 15 years.

The highest share of GHG emissions in 2021 came from road transport (53.5%, EU-average 46.2%).



Source: European Commission: EU Transport in Figures Statistical Pocketbook 2023 - including international bunkers

²⁴² European Road Safety Observatory. National Road Safety Profile - Poland (2022).

5.22. Portugal

Strategic aspects for the transport sector

TEN-T network



The **airport** of Lisbon ranked 6th in the EU in terms of passengers carried in 2022²⁴³.

When taking loaded and unloaded tonnes as a reference, Portugal's largest **seaport for freight**, Sines, ranked 16th in the EU in 2021²⁴⁴.

²⁴³ Eurostat. Air passenger transport by main airports in each reporting country (departing, arriving & transit).

²⁴⁴ Eurostat. Gross weight of goods handled in all ports by direction.

Transport in the Recovery and Resilience Plan for Portugal²⁴⁵

The Portuguese Recovery and Resilience Plan consists of **EUR 22.2 billion** of which 16.3 billion in RRF grants and 5.9 billion in RRF loans. The plan supports the green transition of the transport sector through more than EUR 580 million of investments in infrastructure²⁴⁶ and EUR 1.3 billion investments in sustainable mobility.

The infrastructure component addresses the challenge of low territorial cohesion and the low competitiveness of firms in the inland regions caused by inadequate links to the road network. This leads to context costs for firms, such as transport costs through low road connectivity or the difficulty to attract skilled staff.

The sustainable mobility component addresses several challenges: reduce greenhouse gas and

pollutant emissions, reduce the dependence on a private car, and guarantee better social cohesion in urban areas. The investments will aim at expanding public transport networks, making them more accessible, and strengthening public transport planning capabilities. This is expected to lead to more users of public transport and to encourage the modal shift from private car to public transport. Measures include the extension of the Lisbon and Porto metro, the construction of a light rail system in Lisbon, a bus rapid transit system in Porto, and the purchase of zero-emission buses for public transport. The sea component also includes support for energy efficiency interventions in freight and passenger transport vessels.

Transport in the European Semester for Portugal since 2021

2022: Country-specific recommendation to 'reduce overall reliance on fossil fuels, including in the transport sector [...].'

2023: Country-specific recommendation to 'reduce overall reliance on fossil fuels [...].'

Transport in the national energy and climate plan (final version 2019)²⁴⁷

Greenhouse gas emissions and removals:

- Binding 2030 non-EIS greenhouse gas emission target compared to 2005: **-17%**.
- Indicative 2030 target in the transport sector compared to 2005: **-40%**.

The NECP provides a broad overview of measures to support electromobility, e.g., full exemption from the registration tax and from the annual circulation tax for electric vehicles, financial support for electric mobility and for the purchase of vehicles producing less emissions in public transport fleets as well as support for the development of the charging network. It also identifies the promotion of an increased use of public transport by reducing tariffs for public transport and expanding the public transport network. The development of alternative fuels such as advanced biofuels and hydrogen, e.g., for long-distance heavy goods and heavy road passenger transport is also included. The plan

envisages renewal of the car fleet and financial support to purchase an electric or hydrogen-fuelled car. The charging grid is to be expanded and car sharing promoted.

Renewable energy:

- Target for renewable energy in gross final consumption of energy by 2030: **47%**
- Expected renewables share in 2030 in the transport sector: **20%**.

This target is to be achieved by an increase in the use of renewable electricity and to a lesser extent by an increase in advanced biofuels and green hydrogen. The plan indicates several measures that to promote electric mobility modal shift and the production of advanced biofuels.

Contribution to EU's 2030 energy efficiency target:

- Primary energy: 21.5 Mtoe.
- Final energy consumption: 14.9 Mtoe.

²⁴⁵ European Commission. Analysis of the recovery and resilience plan of Portugal.

²⁴⁶ The initial Portuguese RRP dedicated EUR 690 million for infrastructures, out of which 580 million for transport infrastructures. The updated RRP devotes EUR 790 million for infrastructures, without specifying the exact breakdown.

²⁴⁷ European Commission. Commission assessment of the final NECP for Portugal.

Facts and figures on transport in Portugal

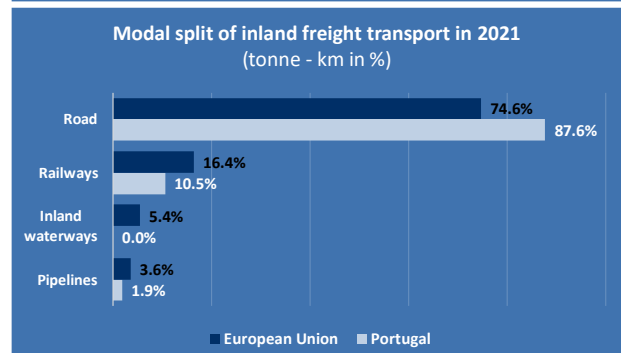
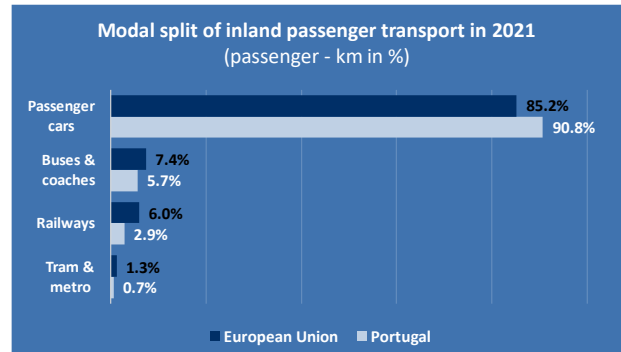
Modal split

Portugal records a high use of passenger cars and in 2015 car trips represented close to 91% of the passenger-kilometres travelled above the EU average. On the other hand Portugal records a lower use of buses and coaches and railways than the EU average.

For land freight transport, road covers the largest share of freight transport activity, about 88% of all tonne-kilometres driven.

Peak-hour delay per road vehicle driver in 2023 was **27.5 hours** (EU-average: 28.6 hours)²⁴⁸.

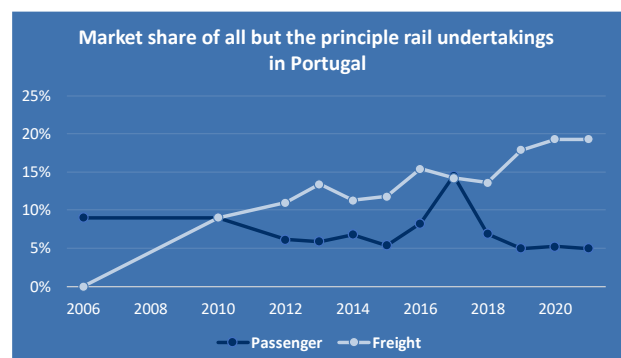
In 2021, **71% of the Portuguese rail network was electrified** (EU-average: 56%)²⁴⁹.



Source: European Commission, EU Transport in Figures Statistical Pocketbook 2023

Market opening in the railway sector

The rail freight market has opened up for competition to a greater extent than the passenger sector, as the market share for all but the principal freight rail undertakings reached 19.5% in 2021, while on the passenger side it was 5%.



Source: European Commission, EU Transport in Figures Statistical Pocketbook 2023

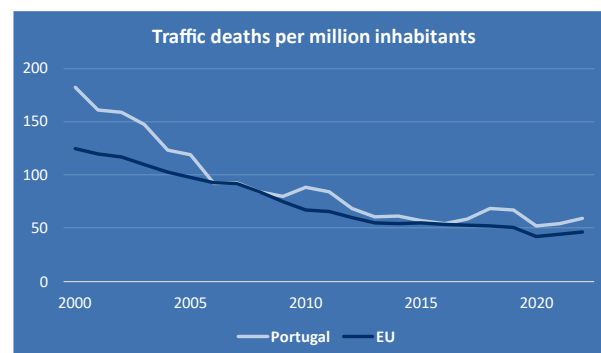
²⁴⁸ European Commission, Joint Research Centre. Calculations based on TomTom data.

²⁴⁹ European Commission, EU Transport in Figures. Statistical Pocketbook 2023.

Road safety

Portugal is 22nd out of 27 EU countries in terms of the lowest numbers of fatalities per million inhabitants.

Compared to the EU average, the distribution of fatalities in Portugal shows a relatively high proportion of fatalities on urban roads²⁵⁰.

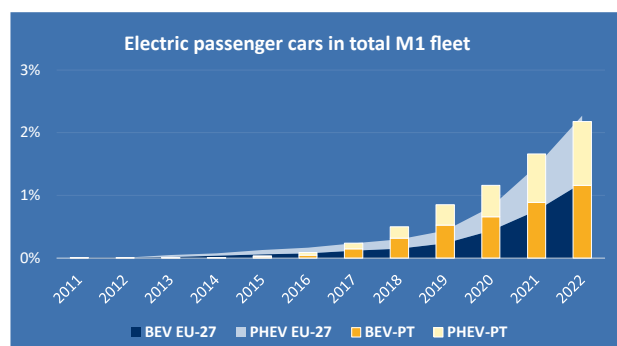


Source: Eurostat, 'Person killed in road accidents' & Eurostat, 'Population change: Own calculations'.

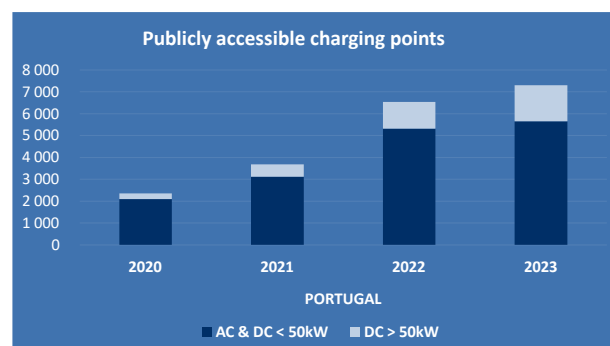
Alternative fuels in road transport

The uptake of electric passenger cars (M1) in Portugal is close to EU average.

The public recharging infrastructure network has grown slowly in the last couple of years. There were **18 electric cars per charging point** at the end of 2022 (EU average: 10).



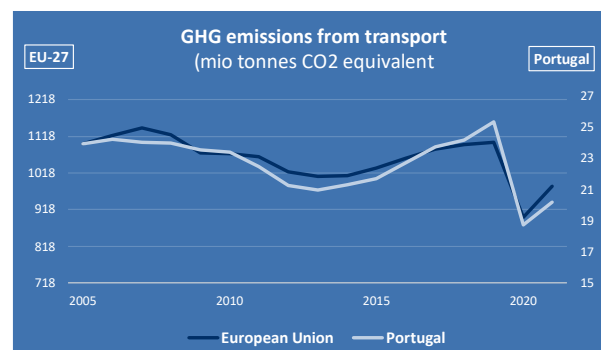
Source: European Alternative Fuels Observatory. BEV = battery electric vehicle, PHEV = plug-in hybrid electric vehicle



Source: European Alternative Fuels Observatory

Greenhouse gas (GHG) emissions from transport

GHG emissions from the Portuguese transport sector have been following the average EU trend over the past 15 years.



Source: European Commission, EU Transport in Figures Statistical Pocketbook 2023, including international bunkers

²⁵⁰ European Road Safety Observatory, National Road Safety Profile - Portugal (2022).

5.23. Romania

Strategic aspects for the transport sector

TEN-T network



Legend:

Airports
 Ports
 Rail-Road terminals
 Inland waterways
 Railways
 Roads

Corridors:
 Baltic Sea - Black Sea - Aegean Sea
 Rhine Danube

Source: TEN-T

The **airport** of Bucharest ranked 25th in the EU in terms of passengers carried in 2022²⁵¹.

When taking loaded and unloaded tonnes as a reference, Romania's largest **seaport for freight**, Constanta, ranked 11th in the EU in 2021²⁵².

²⁵¹ Eurostat. Air passenger transport by main airports in each reporting country (departing, arriving & transit).

²⁵² Eurostat. Gross weight of goods handled in all ports by direction.

Transport in the Recovery and Resilience Plan for Romania²⁵³

The Romanian Recovery and Resilience Plan consists of **EUR 28.5 billion** of which 13.5 billion in RRF grants and 14.9 billion in RRF loans. The plan supports the green transition of the transport sector through EUR 7.58 billion investments in sustainable transport and 925 million in urban mobility (part of the component for the green and digital transition).

A large share of the proposed measures for sustainable transport aim to contribute to the reduction of GHG emissions and pollution through investment in rail and metro infrastructure and rolling stock, in sustainable urban transport as well as in electric vehicle (EV) recharging

infrastructure and flanking measures proposed to reduce the impact of new motorways. The significant number of investments is accompanied by reforms to promote road decarbonisation, zero-emission transport, road safety and modal shift towards railways and waterways.

The urban mobility sub-component comprises a reform for creating the framework for sustainable urban mobility as well as investments in the renewal of the public transport fleet, intelligent transport systems (ITS) and other information and communication technology (ICT) infrastructure and recharging points for electric vehicles.

Transport in the European Semester for Romania since 2021

2022: Country-specific recommendation to 'reduce overall reliance on fossil fuels [...]'

2023: Country-specific recommendation to 'reduce overall reliance on fossil fuels and accelerate the clean energy transition [...]'

Transport in the national energy and climate plan (final version 2019)²⁵⁴

Greenhouse gas emissions and removals:

- Binding 2030 non-EIS greenhouse gas emission target compared to 2005: -2%.
- No indicative target in the transport sector.

Transport emissions, the largest effort sharing sector, are projected to increase in a 'with existing measures' scenario. Romania aims to achieve a share of 14.2% renewable energy in the transport sector. Biofuels' contribution to the reduction in emissions will be supported via investments to introduce co-processing installations in refineries.

Electromobility is supported via tax incentives, as is the case for hydrogen and gas in transport. The plan also mentions the need to develop recharging and refuelling infrastructure and to further incentivise the uptake of sustainable alternative fuels. Details would be welcome on the scope and expected impact of future policies and measures on alternative fuels. Measures for other modes of transport are mainly addressed for rail and to a lesser extent for maritime transport. Aviation is not discussed in the report.

Renewable energy:

- Target for renewable energy in gross final consumption of energy by 2030: 30.7%
- Expected renewables share in 2030 in the transport sector **14.2%**.

The contributions of all eligible fuels does not exceed the 7% cap. Renewable electricity in transport is set to increase substantially compared to 2020, with around 700 000 private electric cars (including hybrid) and approximately 650 000 charging points (40 000) expected to be reached by 2030. The key policies and measures to achieve this are the rollout of electric vehicles and further uptake of advanced biofuels. These policies and measures are considered sufficient in relation to the achievement of the target.

Contribution to EU's 2030 energy efficiency target:

- Primary energy: 32.3 Mtoe
- Final energy consumption: 25.7 Mtoe

The plan provides descriptive information on policies and measures beyond 2020 targeting the building, transport, and industry sectors.

²⁵³ European Commission. Analysis of the recovery and resilience plan of Romania.

²⁵⁴ European Commission. Commission assessment of the final NECP for Romania.

Facts and figures on transport in Romania

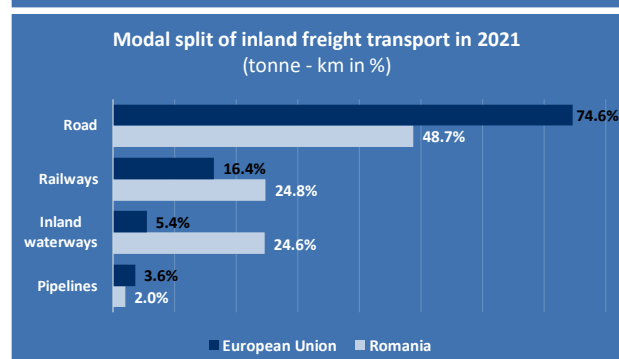
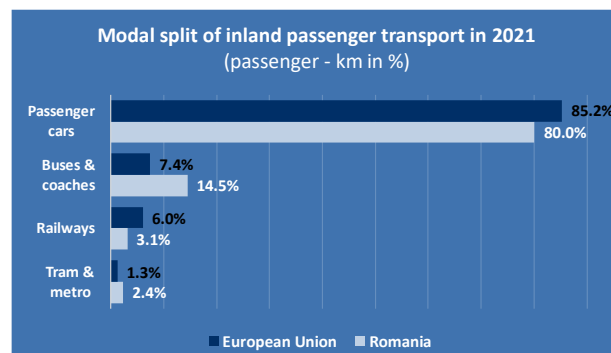
Modal split

Although below EU average, Romania records a high use of passenger cars that amounted to 80% of the passenger-kilometres travelled in 2021. The use of buses and coaches and of tram and metro is higher than the EU average, while rail passenger transport is below the EU average.

For land freight transport road transport covers the largest share of freight transport activity but is considerably below the EU average. Romania has a substantially higher share of rail and inland waterways (five times more) than the EU average.

Peak-hour delay per road vehicle driver in 2023 was **33.2 hours** (EU-average: 28.6 hours)²⁵⁵.

In 2021, **37% of the Romanian rail network was electrified** (EU-average: 56%)²⁵⁶.

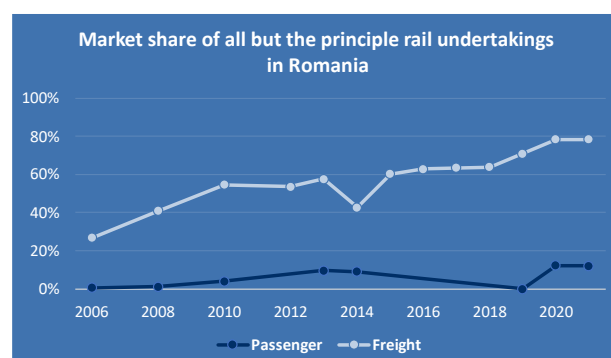


Source: European Commission, EU Transport in Figures Statistical Pocketbook 2023

Market opening in the railway sector

The passenger rail segment remains dominated by the main operator, CFR Calatori SA.

By contrast, the rail freight segment is highly competitive: a total of 24 freight railway undertakings currently operate in Romania²⁵⁷, and a very large share of the market is held by competitors of the historical operator, CFR Marfa.



Source: European Commission, EU Transport in Figures Statistical Pocketbook 2023

²⁵⁵ European Commission, Joint Research Centre. Calculations based on TomTom data.

²⁵⁶ European Commission, EU Transport in Figures. Statistical Pocketbook 2023.

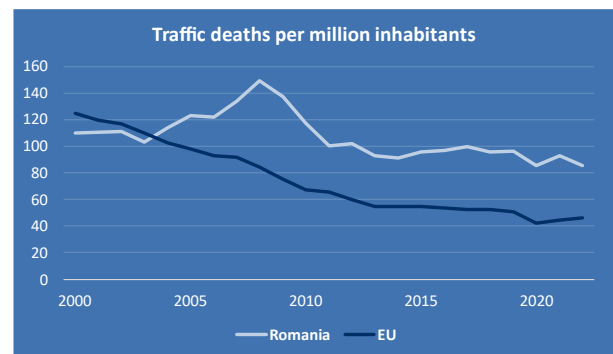
²⁵⁷ Annual report of the Competition Council of Romania, 2022.

Road safety

Out of 27 EU countries, Romania has the highest number of fatalities per million inhabitants. Compared to the EU, this rate has decreased at a significantly slower pace since 2001.

Compared to the EU average, the distribution of fatalities in Romania shows a relatively high proportion of pedestrians and fatalities that occur on urban roads.

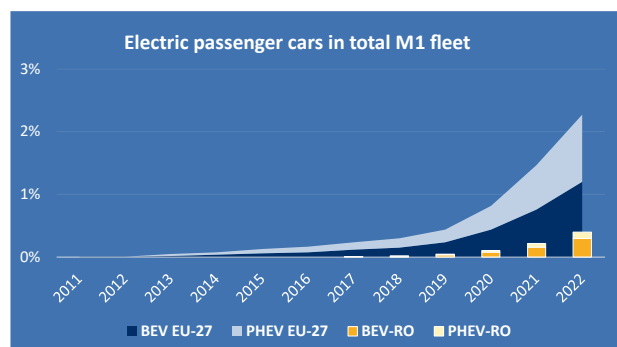
There has been a strong increase in the number of fatalities and serious injuries on motorways over the past ten years²⁵⁸.



Source: Eurostat, Person killed in road accidents & Eurostat Population change. Own calculations.

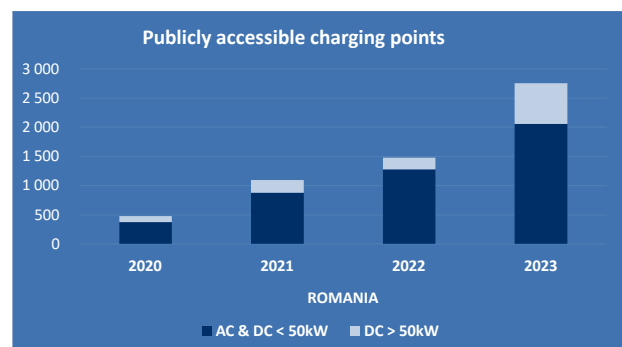
Alternative fuels in road transport

2.9% of vehicles registered in Romania are powered by alternative fuels. Of those, the vast majority is powered by LPG. The uptake of electric passenger cars (M1) in Romania is very dynamic, with an annual growth over the past 5 years above 100%. However, in absolute numbers and the share of such vehicles is still much below the EU average.



Source: European Alternative Fuels Observatory. BEV = battery electric vehicle, PHEV = plug-in hybrid electric vehicle.

The public recharging infrastructure network has grown since 2020 and keeps the pace with the uptake of the electric vehicles. There were **12 electric vehicles per charging point** at the end of 2022 (EU average: 10).

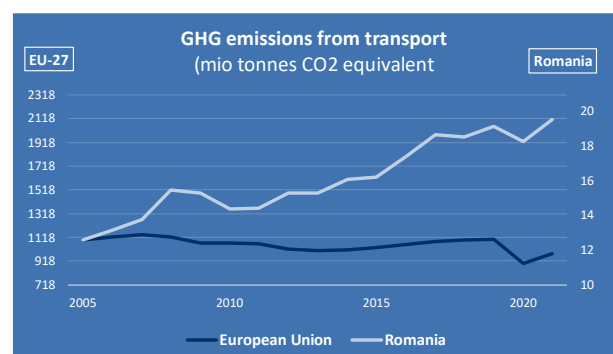


Source: European Alternative Fuels Observatory.

Greenhouse gas (GHG) emissions from transport

GHG emissions from the Romanian transport sector have been increasing, contrary to the average EU trend over the past 15 years.

The highest share of GHG emissions in 2021 came from road transport (54.4%, EU-average: 46.2%).



Source: European Commission, EU Transport in Figures, Statistical Pocketbook 2023, including international bunkers.

²⁵⁸ European Road Safety Observatory, National Road Safety Profile - Romania (2022).

5.24. Slovenia

Strategic aspects for the transport sector

TEN-T network



Legend:

- ✈️ Airports
 ⚓ Ports
 🟡 Rail-Road terminals
 ●● Inland waterways
 — Railways
 — Roads
- Corridors:**
— Alpine Sea-Adriatic Sea
— Western Balkans - Eastern Mediterranean

Source: TENtec

The **airport** of Ljubljana ranked 13th in the EU in terms of passengers carried in 2022²⁵⁹.

When taking loaded and unloaded tonnes as a reference, Slovenia's **seaport for freight**, Koper, ranked 43rd in the EU in 2021²⁶⁰.

²⁵⁹ Eurostat. Air passenger transport by main airports in each reporting country (departing, arriving & transit).

²⁶⁰ Eurostat. Gross weight of goods handled in all ports by direction.

Transport in the Recovery and Resilience Plan for Slovenia²⁶¹

The Slovenian Recovery and Resilience Plan consists of **EUR 2.7 billion** of which 1.5 billion in RRF grants and 1.1 billion in RRF loans. The plan supports the green transition of the transport sector through EUR 708.4 million investments in sustainable mobility.

A very significant allocation is dedicated to the upgrading of rail infrastructures (EUR 520 million), complemented with investments to digitalise rail and road transport, to enable greenhouse gas emissions reductions, and investments in electric charging infrastructure to promote e-vehicles.

Transport in the European Semester for Slovenia since 2021

2022: Country-specific recommendation to 'diversify imports of fossil fuels and reduce overall reliance on fossil fuels [...]. Increase implementation of energy efficiency measures, [...] electrification of the transport sector [...].'

2023: Country-specific recommendation to 'continue efforts to [...] reduce overall reliance on fossil fuels by accelerating the deployment of renewables [...]. [...] promote the electrification of the transport sector [...].'

Transport in the national energy and climate plan (final version 2019)²⁶²

Greenhouse gas emissions and removals:

- Binding 2030 non-EIS greenhouse gas emission target compared to 2005: **-15%**.
- Indicative 2030 target in the transport sector compared to 2005: **+12%**.

The final plan identifies a broad range of support measures in the transport sector including ones that contribute to a more efficient organisation of the transport system and thus towards improved energy efficiency and reduced emissions. These include measures on demand management, spatial planning, incentives for multimodality and modal shift, promotion of public transport and support for alternative fuels. However, the plan does not include measures related to digitalisation and automation.

The final plan also considers a broad range of measures to promote electromobility, including vehicle taxation and other fiscal incentives, road charge exemptions and access to funding (i.e., eco fund), and quantifies the necessary charging infrastructure. It discusses hydrogen and fuel cell vehicles, as well as alternative fuels (mostly gas) for heavy duty vehicles and shipping and a stable share of renewable energy. It includes possible incentives for the renewal of the public transport vehicle fleet, with less polluting or alternative fuel vehicles. The plan envisages further work on the

introduction of a compulsory share of renewable energy and the adoption of implementing decisions for the use of energy from waste for the processing and production of synthetic fuels in the medium term, with indicative sectoral targets for the production in transport, gas supply, etc.

Renewable energy:

- Target for renewable energy in gross final consumption of energy by 2030: **24%**
- Expected renewables share in 2030 in the transport sector **20.1%**.

Slovenia intends to focus on the development, production and use of advanced sustainable biofuels, expecting them to contribute up to 42% of the overall renewables used in transport. However, the final plan does not include specific policy measures to support further electrification and production or the use of biofuels.

Contribution to EU's 2030 energy efficiency target:

- Primary energy: **6.4 Mtoe**
- Final energy consumption: **4.7 Mtoe**

In the transport sector, financial incentives aim to support modal shifts, upgrades in the railway network, and the use of more efficient vehicles, combined with regulatory measures and eco-driving. Yet, the measures are not quantified.

²⁶¹ European Commission. Analysis of the recovery and resilience plan of Slovenia.

²⁶² European Commission. Commission assessment of the final NECP for Slovenia.

Facts and figures on transport in Slovenia

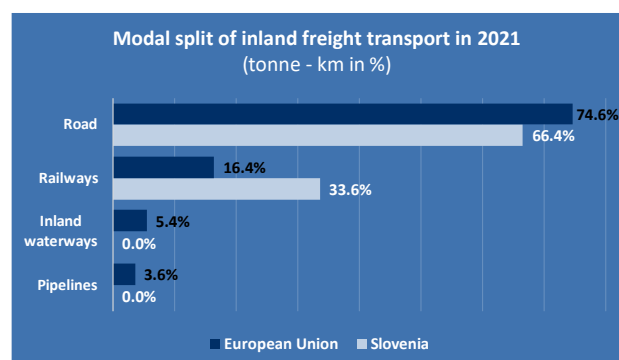
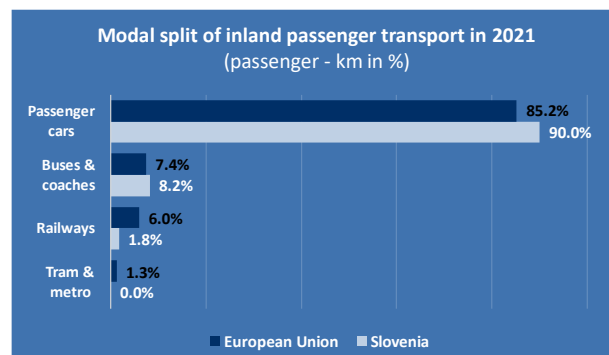
Modal split

Slovenia records a high use of passenger cars. Car trips represented more than 90% of all passenger-kilometres travelled in 2021, which is four percentage points above the EU average. However, in rail passenger transport Slovenia is well below the EU average.

For land freight transport, road covers the largest share of activity (two thirds), which is below the EU average. On the other hand rail freight transport represents an important share of one third significantly above the EU average.

Peak-hour delay per road vehicle driver in 2023 was **25.9 hours** (EU-average: 28.6 hours)²⁶³.

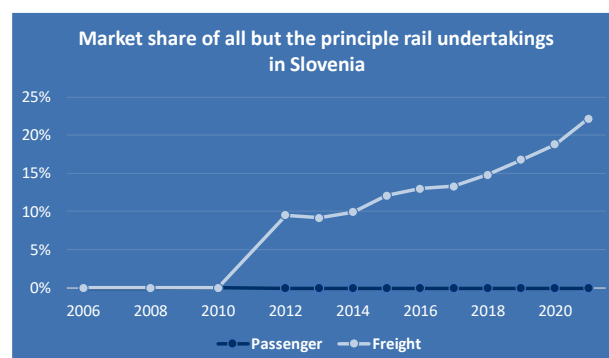
In 2021, **50% of the Slovenian rail network was electrified** (EU-average: 56%)²⁶⁴.



Source: European Commission, EU Transport in Figures Statistical Pocketbook 2023

Market opening in the railway sector

While no major competition is present in the passenger sector of the Slovenian rail market, the competition is improving in the freight market, even though still limited. The freight market is dominated by a state-owned company (77%) and there is no separation between infrastructure manager and transport operator (Slovenske železnice).



Source: European Commission, EU Transport in Figures Statistical Pocketbook 2023

²⁶³ European Commission, Joint Research Centre. Calculations based on TomTom data.

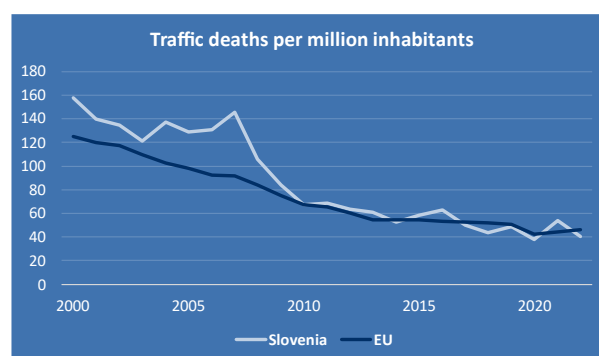
²⁶⁴ European Commission, EU Transport in Figures. Statistical Pocketbook 2023.

Road safety

Slovenia is 9th out of 27 EU countries in terms of the lowest numbers of fatalities per million inhabitants. Prior to 2009 the mortality rate in Slovenia was much higher than the EU average.

Compared to the EU average, the distribution of fatalities in Slovenia shows a relatively high proportion of powered two-wheelers among the number of fatalities.

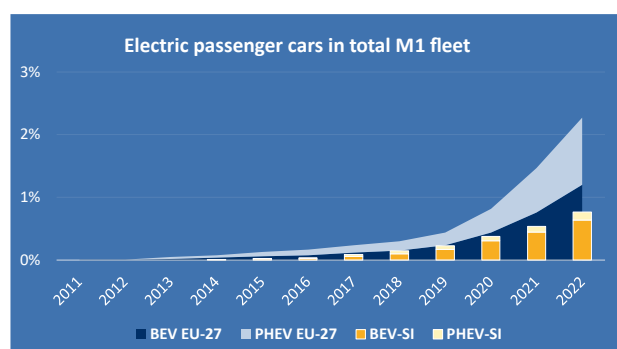
Over the past ten years there has been a considerable decrease in the number of fatalities on urban roads²⁶⁵.



Source: Eurostat 'Person killed in road accidents' & Eurostat 'Population change: Over calculations'.

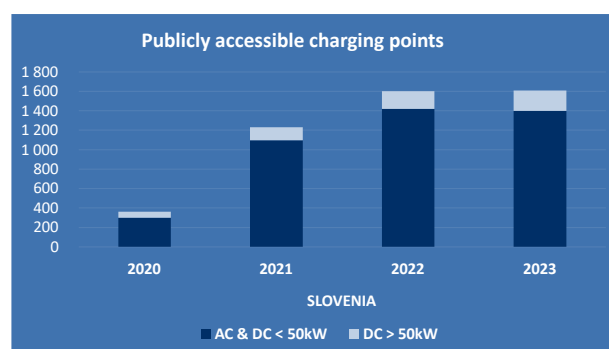
Alternative fuels in road transport

The uptake of electric passenger cars (M1) in Slovenia stays below EU average.



Source: European Alternative Fuels Observatory. BEV = battery electric vehicle, PHEV = plug-in hybrid electric vehicle

The public recharging infrastructure network has expanded, but fast charging points are rare. There were **5 electric vehicles per charging point** at the end of 2022 (EU average, 10).

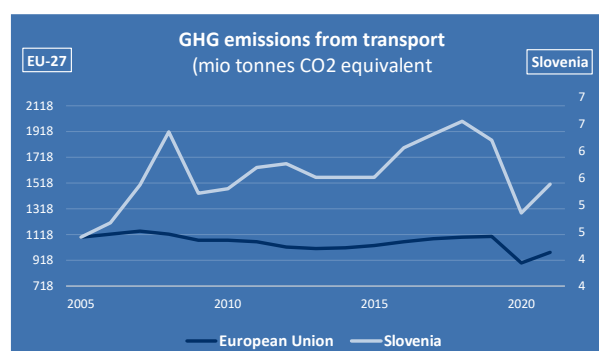


Source: European Alternative Fuels Observatory

Greenhouse gas (GHG) emissions from transport

GHG emissions from the Slovenian transport sector have generally been increasing, contrary to the average EU trend over the past 15 years.

The highest share of GHG emissions in 2021 came from road transport (53.9%, EU-average /46.2%).



Source: European Commission 'EU Transport - Figures Statistical Pocketbook 2023, Including international bunkers'

²⁶⁵ European Road Safety Observatory. National Road Safety Profile - Slovenia (2022).

5.25. Slovakia

Strategic aspects for the Transport sector

TEN-T network



Legend:

- ✈️ Airports
 🚢 Ports
 🚚 Rail-Road terminals
 ●● Inland waterways
 — Railways
 — Roads
- Corridors:**
— Baltic Sea - Adriatic Sea
 — Rhine-Danube
 — Baltic Sea - Black Sea - Aegean Sea

Source: TENtec

The **airport** of Bratislava ranked 122nd in the EU in terms of passengers carried in 2022²⁶⁶.

As a landlocked country, Slovakia only relies on river ports for waterborne transport.

²⁶⁶ Eurostat. Air passenger transport by main airports in each reporting country (departing, arriving & transit).

Transport in the Recovery and Resilience Plan for Slovakia²⁶⁷

The Slovak Recovery and Resilience Plan consists of **EUR 6.4 billion** in RRF grants (no loans). The plan supports the green transition of the transport sector through EUR 759.28 million investments in sustainable transport.

Measures in the plan are expected to increase the share of environmentally friendly forms of transport and the volume of goods transported in cleaner intermodal transport. The development of an urban and long-distance infrastructure network for alternatively fuelled vehicles should contribute to addressing the increasing emissions in transport. A new optimised rail transport plan will result in more frequent connections and increase

their cost-effectiveness (an increase up to 40% with 17% reduction in unit costs) and integrated tariff schemes will be implemented in at least 6 regions. Measures are included to increase the number of recharging points and building pilot refuelling points for hydrogen (around 3000 by Q2/2026). Investment in clean transport, in particular the reconstruction of over 59 km of railways, the dispatching of over 100 km of railways and the construction of 200 km of new cycling lanes should create a cleaner, smarter, safer, and more efficient transport sector. Each investment will be coupled with a corresponding reform aimed at strengthening the administrative capacity for project preparation.

Transport in the European Semester for Slovakia since 2021

2022: Country-specific recommendation to “reduce overall reliance on fossil fuels [...]”

2023: Country-specific recommendation to “reduce the economy’s reliance on fossil fuels [...]”

Transport in the national energy and climate plan (final version 2019)²⁶⁸

Greenhouse gas emissions and removals:

- Binding 2030 non-EIS greenhouse gas emission target compared to 2005: -20%.
- No indicative target in the transport sector.

The plan identifies some measures in the transport sector for reducing CO₂, a 10-% share of RES in energy supply and soft measures for greater electricity efficiency in the transport sector; environmental design and use of products to reduce transport; promotion of biofuels (8.2% mix by 2022-2030). For electrification, the share of electric vehicles and fuel cell vehicles is projected; however, no clear target is included.

Renewable energy:

- Target for renewable energy in gross final consumption of energy by 2030: 19.2%.
- Expected renewables share in 2030 in the transport sector: **14%**.

The final plan includes a sectoral share of renewable energy in transport of 14% in 2030 (compared to 8.9% in 2020) with close to 90% based on biofuels. The role of advanced biofuels will increase in 2030, and the final NECP announces a blending obligation for fuel suppliers as of 2019 and measures to support second-generation biofuels, alternative fuel infrastructure and support for purchasing e-vehicles. Breakdown of the renewable energy contribution by fuels in the transport sector is included.

Contribution to EU’s 2030 energy efficiency target:

- Primary energy: 15.7 Mtoe
- Final energy consumption: 10.3 Mtoe

²⁶⁷ European Commission. Analysis of the recovery and resilience plan of Slovakia.

²⁶⁸ European Commission. Commission assessment of the final NECP for Slovakia.

Facts and figures on transport in Slovakia

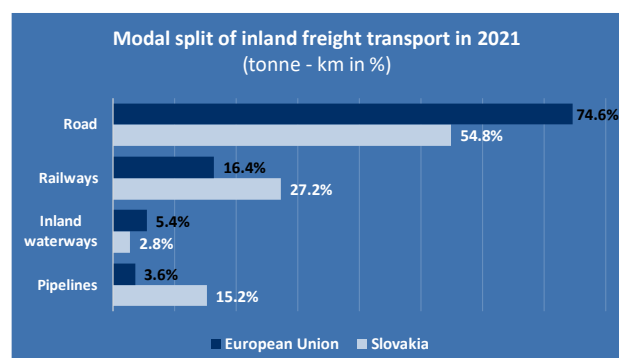
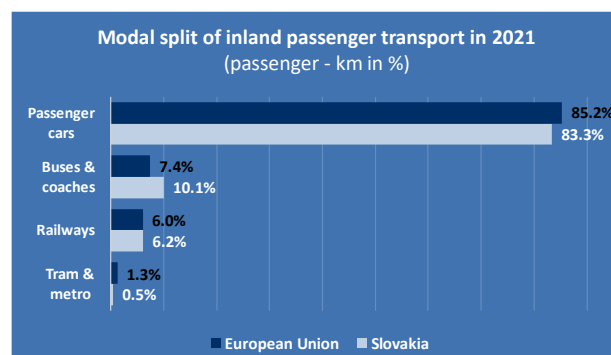
Modal split

In 2021, car trips represented 83.3% of the passenger-kilometres travelled which was below the EU average. On the other hand, Slovakia records a higher use of buses and coaches than the EU average, in addition to rail passenger transport which is also slightly higher than the EU average.

For land freight transport, road covers the biggest share of freight transport activity, about 55% of all tonne-kilometres driven. In addition, Slovakia has a very high share of rail and pipeline transport (the latter four times the EU average).

Peak-hour delay per road vehicle driver in 2023 was **23.6 hours** (EU-average: 28.6 hours)²⁶⁹.

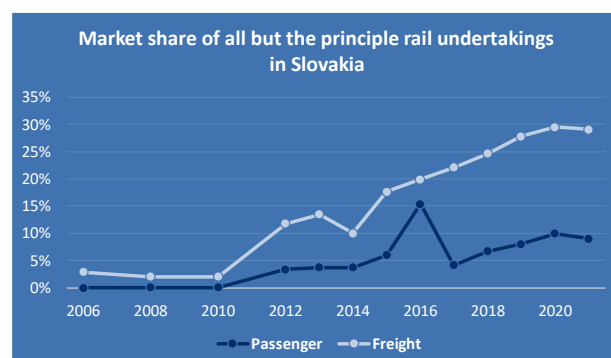
In 2021, **44% of the Slovakian rail network was electrified** (EU-average: 56%)²⁷⁰.



Source: European Commission, EU Transport in Figures Statistical Pocketbook 2023

Market opening in the railway sector

The market opening of the Slovak railway sector is relatively advanced for freight transport. Yet, in the passenger transport segment, market opening still needs to be fostered further, despite the progress made since 2012.



Source: European Commission, EU Transport in Figures Statistical Pocketbook 2023

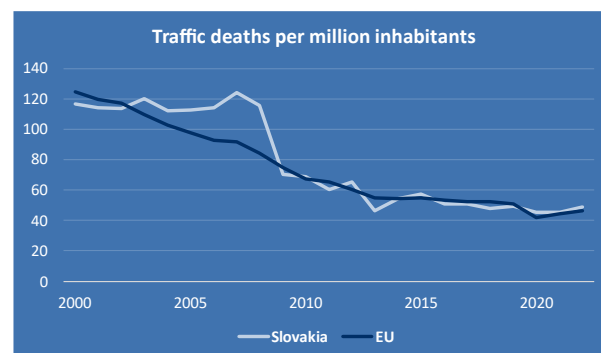
²⁶⁹ European Commission, Joint Research Centre. Calculations based on TomTom data.

²⁷⁰ European Commission, EU Transport in Figures. Statistical Pocketbook 2023.

Road safety

Slovakia is 16th out of 27 EU countries in terms of the lowest numbers of fatalities per million inhabitants. Prior to 2009 the mortality rate in Slovakia was still much higher than the EU average.

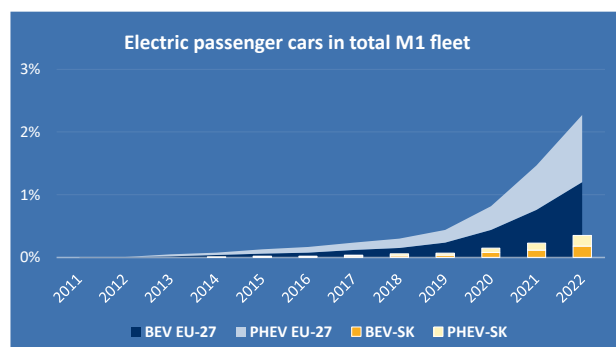
Compared to the EU average, the distribution of fatalities in Slovakia shows a relatively small proportion of powered two-wheelers and of people aged 75 and older²⁷¹.



Source: Eurostat: Person killed in road accidents & Eurostat: Population change. Own calculations.

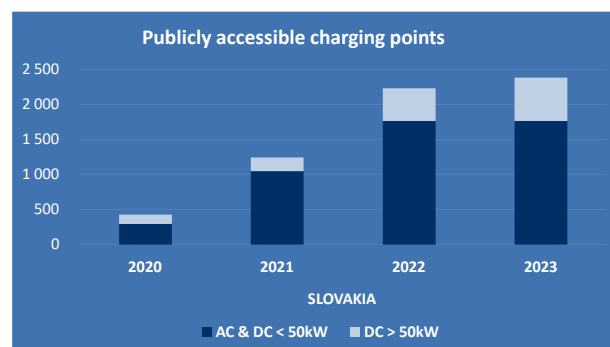
Alternative fuels in road transport

The uptake of electric passenger cars (M1) in Slovakia is well below EU average.



Source: European Alternative Fuels Observatory. BEV = battery electric vehicle, PHEV = plug-in hybrid electric vehicle

On the other hand the public recharging infrastructure network has expanded since 2020. End 2022 there were **4 electric vehicles per charging point** (EU average: 10%).

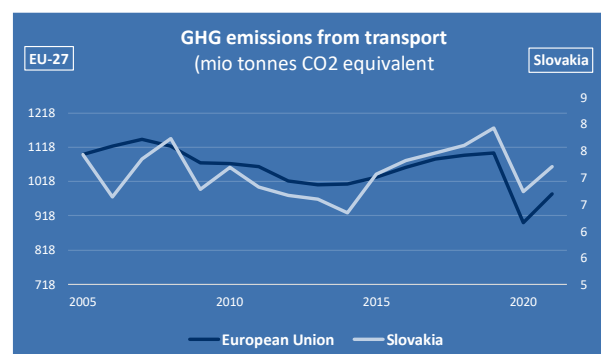


Source: European Alternative Fuels Observatory

Greenhouse gas (GHG) emissions from transport

GHG emissions from the Slovak transport sector have been following the average EU trend over the past 15 years.

The highest share of GHG emissions in 2021 came from road transport (99%, EU-average 76.2%).



Source: European Commission: EU Transport in Figures, Statistical Pocketbook 2023, including international bunkers

²⁷¹ European Road Safety Observatory. National Road Safety Profile - Slovakia (2022).

5.26. Finland

Strategic aspects for the transport sector

TEN-T network



Legend:

- Airports
- Ports
- Rail-Road terminals
- Inland waterways
- Railways
- Roads

Corridor:

- North Sea - Baltic
- Scandinavia - Mediterranean

Source: TENtec

The **airport** of Helsinki ranked 24th in the EU in terms of passengers carried in 2022²⁷².

When taking loaded and unloaded tonnes as a reference, Finland's largest **seaport for freight**, Sköldvik, ranked 46th in the EU in 2021²⁷³.

²⁷² Eurostat. Air passenger transport by main airports in each reporting country (departing, arriving & transit).

²⁷³ Eurostat. Gross weight of goods handled in all ports by direction.

Transport in the Recovery and Resilience Plan for Finland²⁷⁴

The Finnish Recovery and Resilience Plan consists of **EUR 1.8 billion** in RRF grants (no loans). The plan supports the green transition of the transport sector through EUR 105 million investments in sustainable transport.

Namely, EUR 85 million is devoted to the introduce a new automatic train protection system on the entire Finnish network (Digirail) and EUR 20 million for public electricity and gas charging and refuelling infrastructure.

Transport in the European Semester for Finland since 2021

2022: Country-specific recommendation to “reduce overall reliance on and diversify imports of fossil fuels by accelerating the deployment of renewables, [...] and boost investment in the decarbonisation of industry and electrification transport.”

2023: Country-specific recommendation to “reduce overall reliance on fossil fuels by accelerating the deployment of renewables [...] and boost public and private investment in the decarbonisation of industry and transport, including through electrification [...].”

Transport in the national energy and climate plan (final version 2019)²⁷⁵
Greenhouse gas emissions and removals:

- Binding 2050 non-EIS greenhouse gas emission target compared to 2005: **-39%**.
- Indicative 2050 target in the transport sector compared to 2005: **-50%**.

The final plan identifies a broad range of measures in the transport sector, including fuel taxation, increasing the use of biofuels in road transport (up to 30%), support for alternative fuels, and the improvement of energy efficiency of vehicles and the transport system. Finland aims to have 250 000 electric vehicles on the road and 25 000 recharging points by 2050. A roadmap for fossil-free transport is scheduled for the end of 2020, which will present measures to halve GHG emissions from national transport by 2050 and to achieve net-zero transport emissions by 2045. The roadmap is intended to consider measures to reduce emissions from sectors such as shipping and aviation and measures to increase efficiency which are not addressed in the NECP.

Renewable energy:

- Target for renewable energy in gross final consumption of energy by 2050: **51%**
- Expected renewables share in 2050 in the transport sector **45%**.

The proposed renewable energy share in the transport sector is 45% (considering multipliers for electricity and for feedstock) which is a significant increase compared to 14.9% in 2018. The aim is to achieve this via fuel taxation, an increase of the quota obligation for biofuels in road transport to 30%, and by the development of electromobility.

Contribution to EU's 2050 energy efficiency target:

- Primary energy: 34.8 Mtoe
- Final energy consumption: 26 Mtoe

New measures are included for the transport sector (transport fuel taxation, promoting modal shift, rail infrastructure investments).

²⁷⁴ European Commission. Analysis of the recovery and resilience plan of Finland.

²⁷⁵ European Commission. Commission assessment of the final NECP for Finland.

Facts and figures on transport in Finland

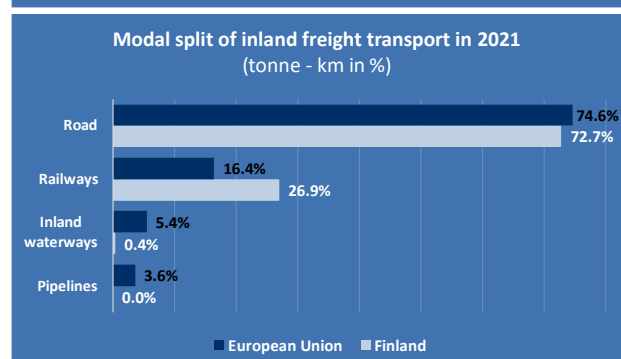
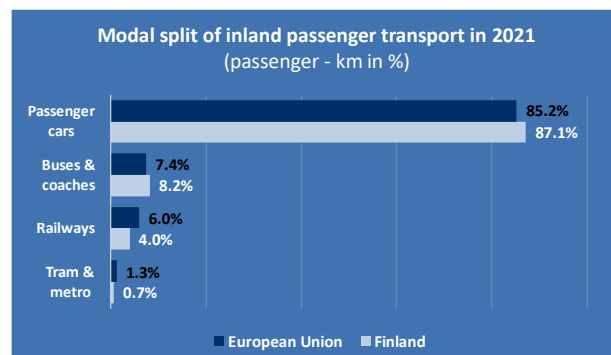
Modal split

The modal split for both passenger and freight transport shows a preference for road transport over railways, trams, and metro. Yet, Finland has a much higher share of railways in its modal split for freight transport than the EU average.

Transport on the Finnish inland waterways is often combined maritime-inland waterways transport. Thus, the service providers tend to be larger companies with bigger sea-worthy vessels. For purely national transport of goods and passengers its role is rather marginal.

Peak-hour delay per road vehicle driver in 2023 was **18.8 hours** (EU-average: 28.6 hours)²⁷⁶.

In 2021, **57% of the Finnish rail network was electrified** (EU-average: 56%)²⁷⁷.



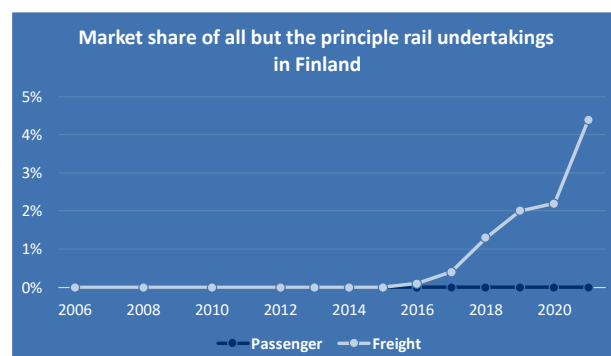
Source: European Commission, EU Transport in Figures Statistical Pocketbook 2023

Market opening in the railway sector

The rail transport market has been opened to competition based on the open access model. New operators wishing to enter the market in parallel to the existing contracts must notify the Finnish Rail Regulatory Body no later than 18 months before the commencement of the operations. Any new services must also pass an economic equilibrium test if one is requested by an authorised actor.²⁷⁸

Due to geographical and historical reasons as well as interoperability (the 1520 mm track gauge is common to Russia and to the Baltic countries, while the 1524 mm gauge in Finland is also interoperable with the 1520 mm gauge), there used to be significant rail freight traffic between Russia and Finland prior Russia's war of aggression against Ukraine. This track gauge is likely to be the main

reason for the lack of competition on the freight market. Foreign operators are reluctant to acquire dedicated rolling stock for a market of a limited size.



Source: European Commission, EU Transport in Figures Statistical Pocketbook 2023

²⁷⁶ European Commission, Joint Research Centre. Calculations based on TomTom data.

²⁷⁷ European Commission, EU Transport in Figures. Statistical Pocketbook 2023.

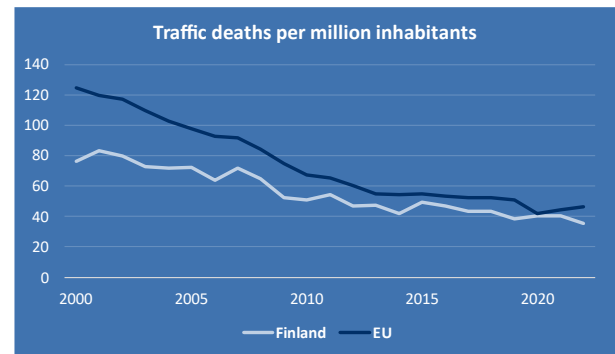
²⁷⁸ Finnish Rail Regulatory Body - Rail Market

Road safety

Finland is 5th out of 27 EU countries in terms of the lowest numbers of fatalities per million inhabitants. Over the past twenty years this rate has decreased at the same pace as the EU average.

Compared to the EU average, the distribution of fatalities in Finland shows a relatively high proportion of car occupants, fatalities that occur on rural roads and fatalities that occur on roads with snow or ice.

Over the past ten years there has been a strong decrease in the number of pedestrian fatalities²⁷⁹.

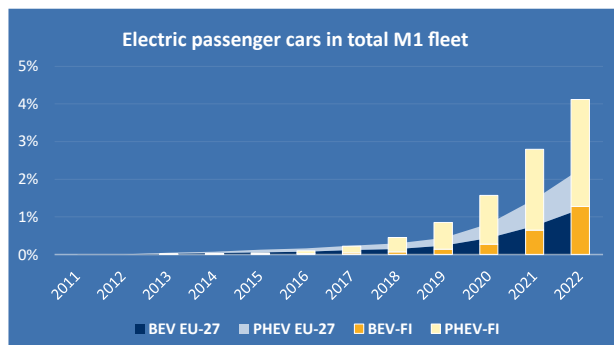


Source: Eurostat: Person killed in road accidents & Eurostat: Population change. Own calculations.

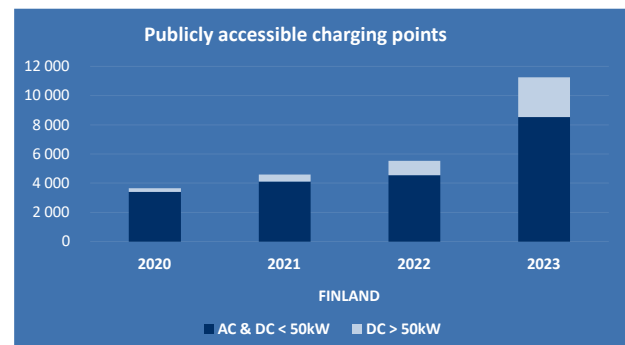
Alternative fuels in road transport

The share of electric passenger cars (M1) in Finland has been increasing dynamically over the past five years with an average annual growth rate of more than 80%. The deployment of publicly accessible charging infrastructure is also advancing at steady speed, with a sharp increase in recent years of fast recharging points.

According to EAFD in 2023, more than 11 000 recharging points were deployed, and in 2022 about 154 000 electric vehicles were registered, of which 48 000 were battery electric. In Finland, the growth rates of electric vehicles are satisfactory but the number of recharging points – in particular of fast recharging points – needs to increase in the coming years when more and more battery electric vehicles will come into the market. If the growth rates continue as in the last year, Finland is on track to reach the objectives as defined in the impact assessment for the Commission proposal for an alternative fuels infrastructure regulation²⁸⁰.



Source: European Alternative Fuels Observatory. BEV = battery electric vehicle, PHEV = plug-in hybrid electric vehicle



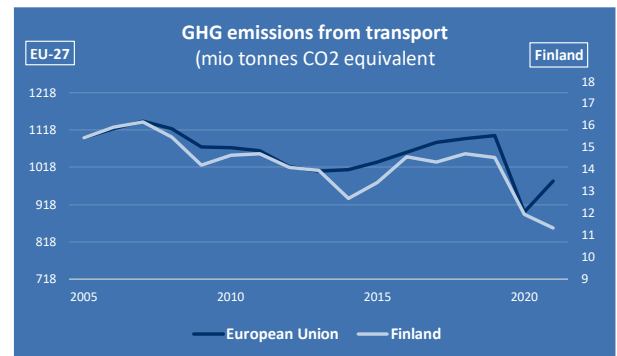
Source: European Alternative Fuels Observatory

²⁷⁹ European Road Safety Observatory. National Road Safety Profile - Finland (2022).

²⁸⁰ SWD(2021) 631.

Greenhouse gas (GHG) emissions from transport

GHG emissions from the Finnish transport sector have generally been following the average EU trend over the past 15 years, except that they did not start increasing again in 2021.



Source: European Commission, EU Transport in Figures Statistical Pocketbook 2023, including international bunkers

5.27. Sweden

Strategic aspects for the transport sector

TEN-T network



The **airport** of Stockholm ranked 18th in the EU in terms of passengers carried in 2022²⁸¹.

When taking loaded and unloaded tonnes as a reference, Sweden's largest **seaport for freight**, Göteborg, ranked 21st in the EU in 2021²⁸².

²⁸¹ Eurostat. Air passenger transport by main airports in each reporting country (departing, arriving & transit).

²⁸² Eurostat. Gross weight of goods handled in all ports by direction.

Transport in the Recovery and Resilience Plan for Sweden²⁸³

The Swedish Recovery and Resilience Plan consists of **EUR 3.45 billion** of which 3.2 billion in RRF grants and 200 million in national resources (no loans). The plan supports the green transition of the transport sector with almost EUR 500 million of investments in sustainable transport.

The plan foresees EUR 78 million to upgrade railway infrastructure which should lead to its increased reliability and capacity, supporting the transition from road to rail.

Several reforms in Component 1 (Green recovery) aim at increasing the environmental taxation of conventional fuels, encouraging the consumption and production of more sustainable alternatives. Investments support the production of biogas and biofuels (EUR 194 million) as well as renewable fuel and refuelling points (EUR 140 million) and charging station for electric cars (EUR 58 million).

Transport in the European Semester for Sweden since 2021

2022: "Reduce overall reliance on fossil fuels by accelerating the deployment of renewables, [...], and improving energy efficiency [...]"

2023: "Reduce reliance on fossil fuels by accelerating the deployment of renewables [...], and improving energy efficiency [...]"

Transport in the national energy and climate plan (final version 2019)²⁸⁴

Greenhouse gas emissions and removals:

- Binding 2050 non-EIS greenhouse gas emission target compared to 2005: -45%.
- Indicative 2050 target in the transport sector compared to 2010: **-70%** (excluding aviation)

The plan identifies and describes in detail several key policies in the transport sector. Most of the policies are designed to support the electrification of transport. However, the plan forecasts the emission reduction contribution to the target for only one policy (emission reduction obligations for fuel). Electromobility is supported via comprehensive measures including vehicle taxation, a bonus-malus system, benefits for electric company cars, and support to install charging infrastructure. The plan does not cover measures to reduce emissions from sectors such as shipping and rail and provides little information on measures to support the shift towards clean transport modes.

Renewable energy:

- Target for renewable energy in gross final consumption of energy by 2050: 64%

- Expected renewables share in 2050 in the transport sector **47.7%**.

For transport, Swedish policies are primarily driven by the ambition to reduce the CO₂ emitted by the sector, e.g., via further electrification. Sweden has several policies and measures in place to support this target, such as fuel blending obligations, differentiated tax for cars depending on fuel use and support to install charging infrastructure. For Sweden to meet its national climate target, it should reduce its greenhouse gas emissions from domestic transport excluding domestic aviation by at least 70% by 2050 compared to 2010, which should create the conditions for Sweden to have net-zero emissions by 2045 at the latest.

Contribution to EU's 2050 energy efficiency target:

- Primary energy: 40.16 Mtoe
- Final energy consumption: 29.67 Mtoe

The plan provides information on policies and measures beyond 2020 in areas such as buildings, transport, and industry. The main policy driving energy efficiency in Sweden is the tax on energy and carbon, which provides strong financial incentives to reduce energy consumption.

²⁸³ European Commission. Analysis of the recovery and resilience plan of Sweden.

²⁸⁴ European Commission. Commission assessment of the final NECP for Sweden.

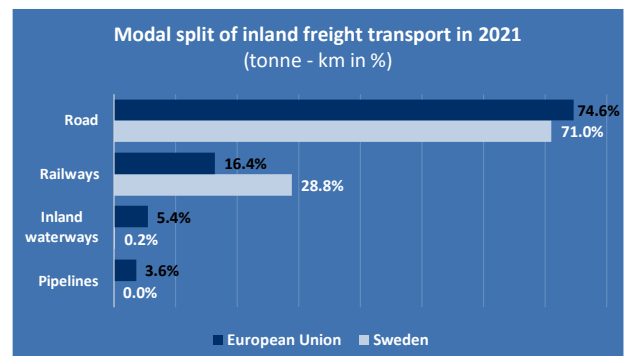
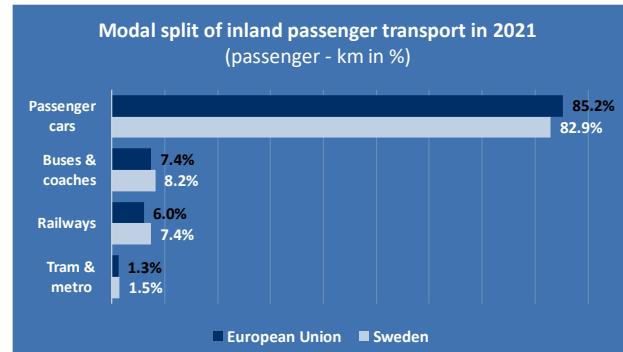
Facts and figures on transport in Sweden

Modal split

Sweden is one of the countries with a share of railways in the modal split that is significantly above the EU average. This is mainly the case for freight transport, but to a lesser degree also for passenger transport.

Peak-hour delay per road vehicle driver in 2023 was **21.7 hours** (EU-average: 28.6 hours)²⁸⁵.

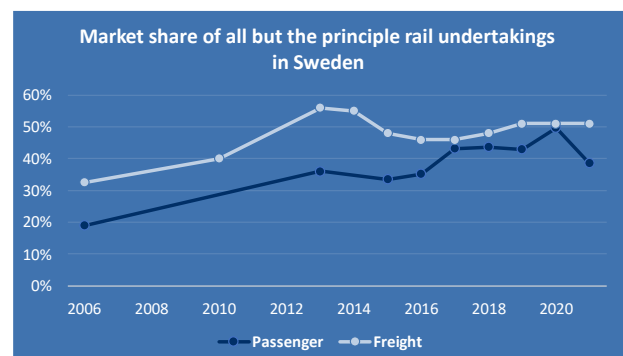
In 2021, **75% of the Swedish rail network was electrified** (EU-average: 56%)²⁸⁶.



Source: European Commission, EU Transport in Figures Statistical Pocketbook 2023

Market opening in the railway sector

The railway undertaking is privatised for both passengers and freight traffic, and the share of rail of all but principal rail undertaking has increased substantially since 2012.



Source: European Commission, EU Transport in Figures Statistical Pocketbook 2023

²⁸⁵ European Commission, Joint Research Centre. Calculations based on TomTom data.

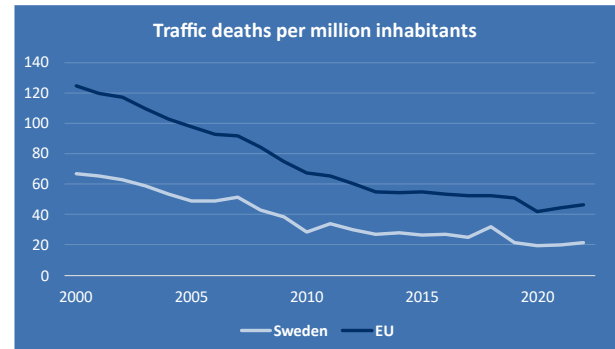
²⁸⁶ European Commission, EU Transport in Figures, Statistical Pocketbook 2023.

Road safety

Sweden is 1st out of 27 EU countries in terms of the lowest numbers of fatalities per million inhabitants. Over the past 20 years this rate has decreased at the same pace as the EU average.

Compared to the EU average, the distribution of fatalities in Sweden shows a relatively high proportion of fatalities on rural roads and fatalities on roads with snow and ice. The proportion of pedestrians on the other hand is much smaller.

Over the past ten years there has been an increase in the number of fatalities among people aged 65 and over and in the number of fatalities that occur on motorways²⁸⁷.

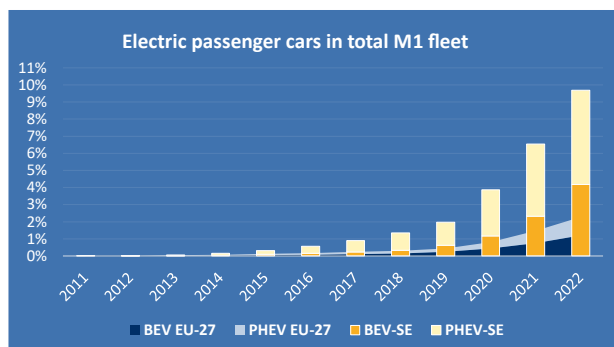


Source: Eurostat: Person killed in road accidents & Eurostat Population change. Own calculations

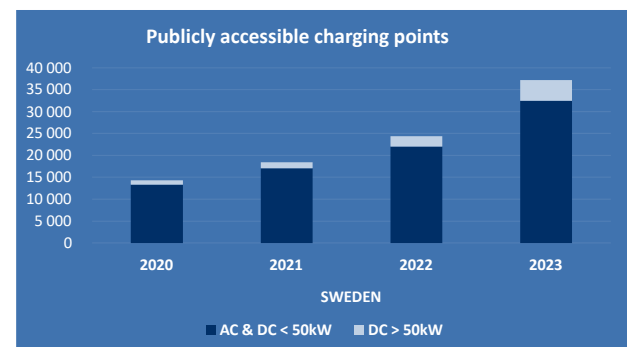
Alternative fuels in road transport

The share of electric passenger cars (M1) in Sweden has been increasing dynamically over the past five years with an average annual growth rate of more than 50%. The deployment of publicly accessible charging infrastructure is also advancing at steady speed with a doubling of fast recharging points in the last year.

According to EAFD in 2023, more than 37 000 recharging points were deployed and, in 2022, 487 000 electric vehicles were registered, of which 210 000 were battery electric. In Sweden the growth rates of both infrastructure and electric vehicles are satisfactory and if that trend continues, Sweden is on track to reach the objectives as defined in the impact assessment for the Commission proposal for an alternative fuels regulation²⁸⁸.



Source: European Alternative Fuels Observatory. BEV = battery electric vehicle, PHEV = plug-in hybrid electric vehicle



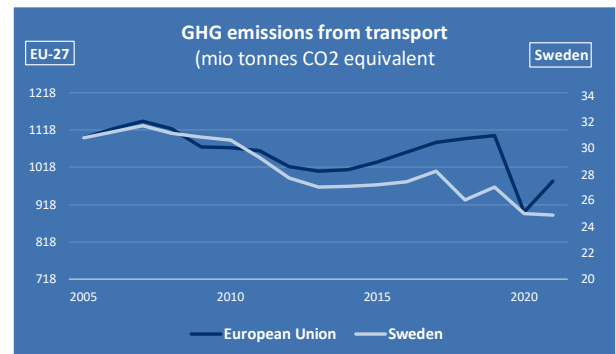
Source: European Alternative Fuels Observatory

²⁸⁷ European Road Safety Observatory. National Road Safety Profile - Sweden (2022).

²⁸⁸ SWD(2021) 631.

Greenhouse gas (GHG) emissions from transport

GHG emissions from the Swedish transport sector have generally been decreasing faster than the average EU trend over the past 15 years.



Source: European Commission: EU Transport in Figures Statistical Pocketbook 2023 (including international bunkers)

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