



The State of European Transport 2024

An overview of the EU's largest climate problem

March 2024

Key Messages

Our transport system is on the cusp of a revolution. We need to rapidly move away from burning fossil fuel to power our vehicles, vessels and aircraft to a sustainable system of electrification and clean fuels. T&E's [State of European Transport](#) shows where we are today, and where we are heading.

- Since its peak in 2007, transport has been decarbonising more than 3 times slower than the rest of the economy
- While the rest of the economy reduced emissions by 1644 MtCO₂e since 1990, transport increased its emissions by 217 MtCO₂e to exceed 1 GtCO₂e, equivalent to more than the total emissions of Germany and the Netherlands combined
- Preliminary data shows that road transport emissions reduced by 8 MtCO₂e last year and shipping by 5 MtCO₂e. This reduction was undone by the continued rebound and growth of aviation emissions, which increased by 15 MtCO₂e.
- European transport emissions have increased 26% since 1990 - their share could reach 44% of all emissions by 2030 with current Green Deal policies.
- Preventing new and every growing demand for transport, by halting new airport and motorway capacity expansion, is key to reducing the renewable energy required to decarbonise the sector.
- Ambitious and binding electric vehicle sales targets for companies that own large fleets of vehicles are key to accelerating the transition to zero-emission. Coupled with measures to prevent growth and measures to tackle the existing car stock, these could cut emissions by a further 213 MtCO₂e savings in 2040.
- Unlocking efficiency gains in the shipping sector could bring save an additional 93 MtCO₂e in 2030, crucial for charting a course to zero emissions by mid century.
- Direct electrification of road transport is more than 2 times more efficient than hydrogen power and 4 times more efficient than using e-fuels. Europe cannot afford to waste renewable electrons.

1. Introduction

Transport is at the core of our society. Vehicles and bikes take us to work, to friends and to family. Planes and trains take us to new far flung places. Trucks and ships allow commodities and products to be traded across and between continents. But all of this moving leaves a hefty carbon footprint in its wake. Our vehicles, vessels and planes are heavily reliant on oil. Our ever increasing mobility has driven a surge in emissions.

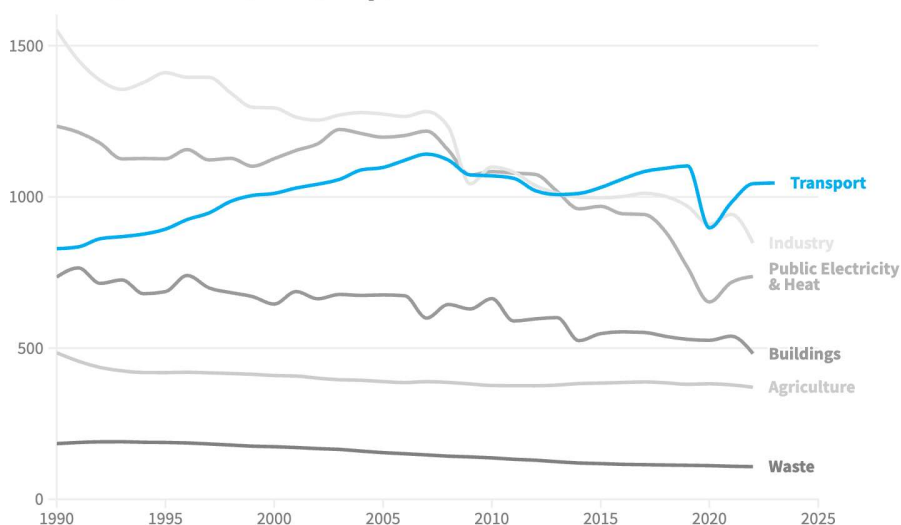
T&E, leading the charge for sustainable transport in Europe, has been working tirelessly to curb these emissions and set them on the road to zero emissions. This briefing gives an overview of our new interactive webpage: [State of European Transport](#). We give you an overview of European transport and explore key questions: How have emissions evolved? What's happening in your country and in your city? What are the impacts of the European Green Deal?

2. Transport: the biggest source of Europe's greenhouse gas emissions

Transport emissions in Europe have been growing since 1990 - bucking the trend of other sectors of the economy. This growth resulted in transport becoming the largest source of greenhouse gas emissions in the EU, exceeding 1 Gt CO₂eq. The largest source of those emissions are from the burning of oil in the internal combustion engines of cars, trucks, buses and vans

Transport is the biggest source of emissions in the EU

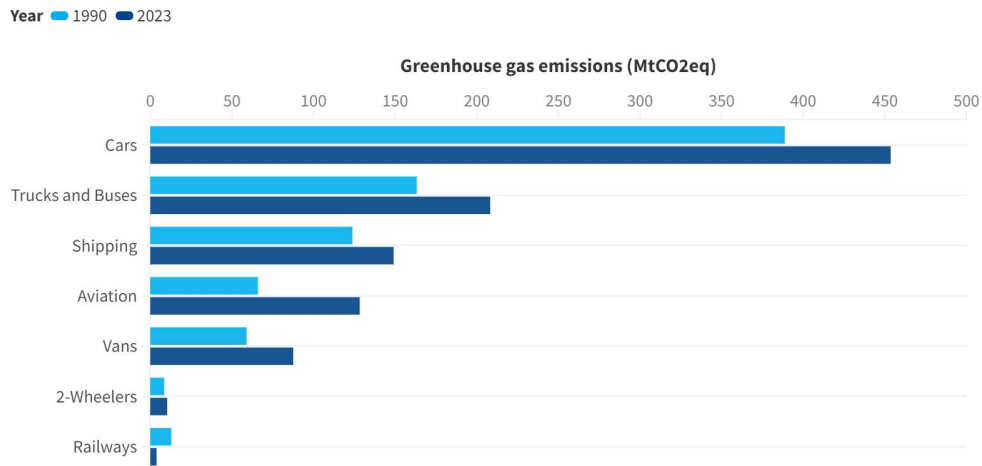
Greenhouse gas emissions by sector (MtCO₂e)



Source: UNFCCC GHG inventories, EEA, Stratas Advisors • Transport includes international aviation and maritime emissions



Road vehicles the biggest source of EU's transport emissions



Source: UNFCCC GHG Inventories, Stratas Advisors • Includes international Aviation and Shipping



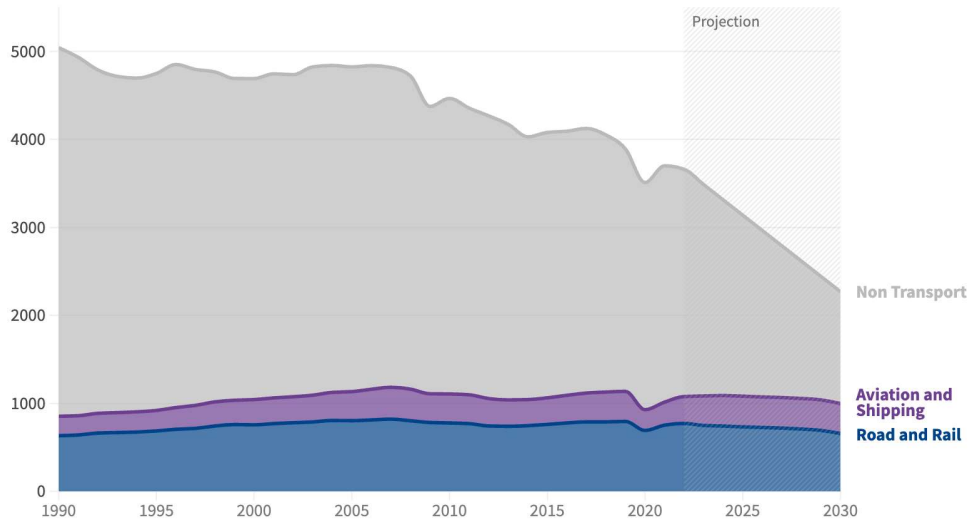
The Green Deal: ambitious, but more can and needs to be done

The European Green Deal's suite of climate regulations address these runaway transport emissions. But how far do they go in decarbonising the sector?

Our modelling shows that under the Green Deal package of regulations, transport emissions will decrease by 8% compared to today. But since the rest of the economy decarbonises so much faster transport risks becoming 44% of total emissions, and still not below 1990 levels. Since 2007, transport has been reducing its emissions more than three times slower than the rest of the economy. Our analysis includes transport emissions that still partially fall through the cracks of regulation. These include flights to countries beyond Europe and the entirety of shipping voyages between Europe and its international trading partners, along with smaller - although sizeable - ships that are not covered.

With Green Deal policies, transport risks being 44% of EU's emissions

Greenhouse gas emissions (MtCO₂e)



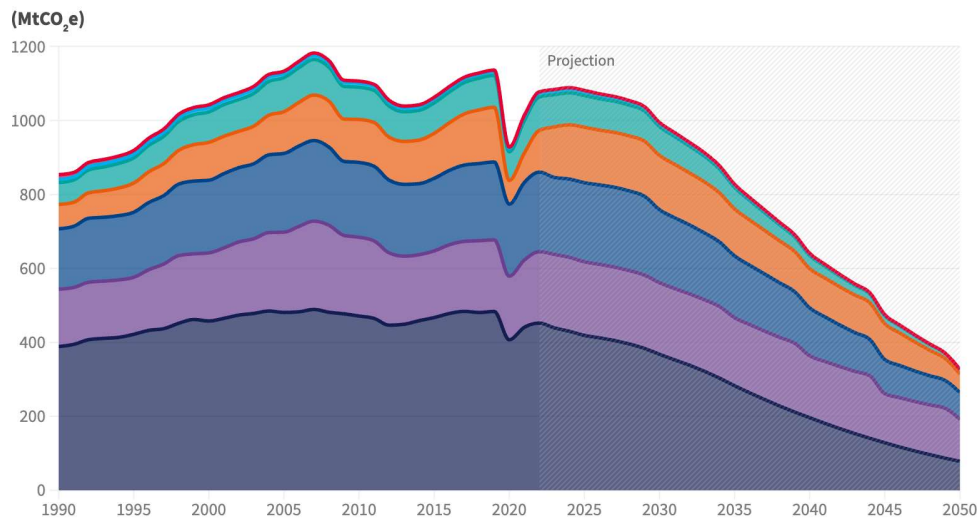
Source: T&E modelling • Non-transport emissions assumed to reduce sufficiently for the EU to reach 55% target



Looking further out to mid-century, we project that the Green Deal will reduce transport emissions by 25% compared to 1990 levels in 2040 and by 62% in 2050. Cars, vans and trucks have a large legacy fleet, and these vehicles will be driving on our roads burning oil for years to come. Shipping operators will have no incentive to increase their operational efficiency. Demand for flights, spurred on by increasing airport capacity, offsets any gains from green fuel uptake this decade.

EU greenhouse gas emissions by transport mode with Green Deal policies

■ Cars ■ Shipping ■ Trucks and Buses ■ Aviation ■ Vans ■ 2-Wheelers ■ Railways



Source: T&E modelling

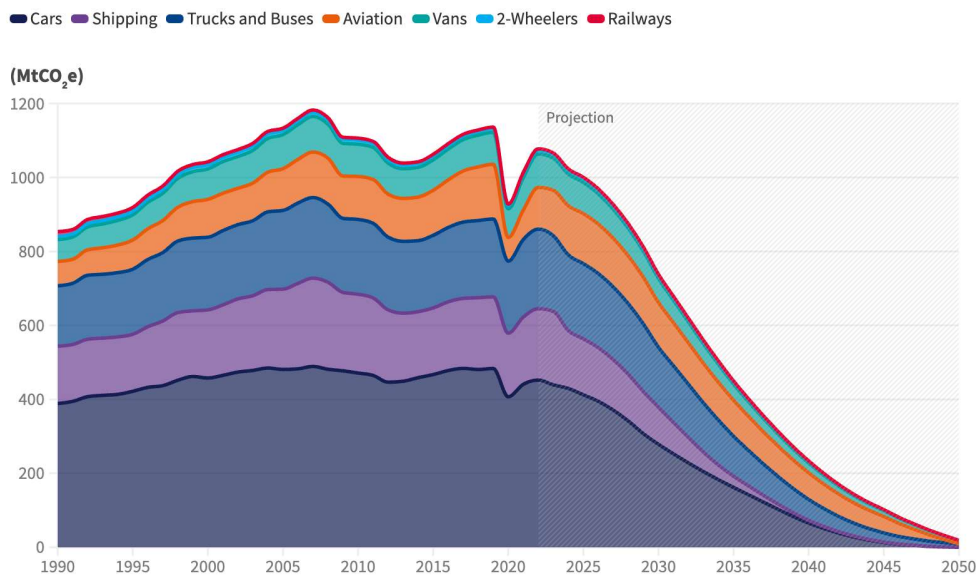


3. T&E's vision: policies that can accelerate the transition

The Green Deal has some key stone policies that need to be fully implemented, such as phasing out the sale of internal combustion engine cars and vans in 2035. Policies at the EU, national, city and company level can hasten the transition while providing more holistic measures to reduce transport's impacts.

EU countries can change their tax laws for company cars, accelerating electric vehicle uptake beyond the minimum levels set by the CO2 standards. The EU may soon look at regulating large fleets of cars and trucks - those businesses will save money and drive the transition. Efficiency measures for shipping are cost effective today, so long as there is a sector wide push to implement them, such as slow steaming and wind assist technologies. Cutting corporate travel for aviation, responsible for approximately 20% of emissions, will mean that the uptake of clean fuels can make a real cut in emissions. Making the right infrastructure decisions, which means not sinking billions into new road and airport capacity, will lower transport activity growth, making it easier to hit deep decarbonisation growth. The result of measures such as these would be a more sustainable transport system that has cut emissions by 73% in 2040 compared to 1990, and zero emission in 2050.

EU greenhouse gas emissions by transport mode with T&E policies



Source: T&E modelling



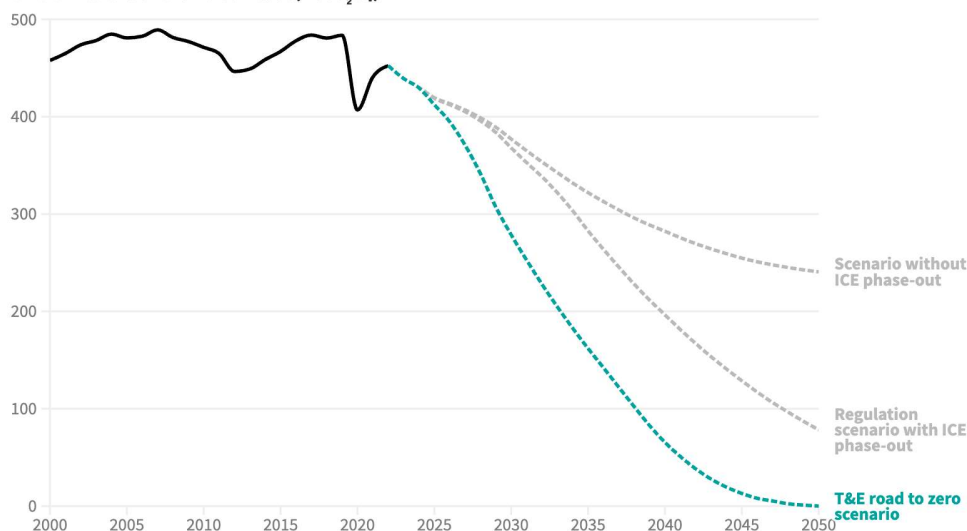
Corporate cars and the existing fleet

The majority of new car sales in Europe - 60% - go through corporate channels, rather than private buyers. These corporate cars, whether they be company cars, government fleets, or short and long term rentals, have tax incentives and the purchasing power that only large corporations can leverage. This makes them a key actor in either the acceleration - or the stalling - of the electric car transition. We call on the EU and national governments to set a 100% zero emission target for new corporate car registrations.

On the other hand, decarbonising the existing fleet of internal combustion engine cars is a unique challenge that will likely require EU and national level policy and financial support. Taking these cars out of circulation will require options such as scrappage schemes, where vehicles are traded in exchange for mobility subscriptions - public transport or car sharing - or for grants for new or second hand battery electric cars or for retrofitting cars with battery electric drivetrains en masse. Investments in road capacity building exacerbates the emissions and desirability of car ownership and diverts much needed public money away from sustainable transportation. If we can achieve these goals, car tailpipe emissions could all but disappear by the middle of the century.

ICE phase-out and additional policies are needed to decarbonise the EU car fleet (by 2050)

GHG emissions of the EU car fleet (MtCO₂eq)



Source: European road transport database and T&E's EUTRM model • Scope: EU27

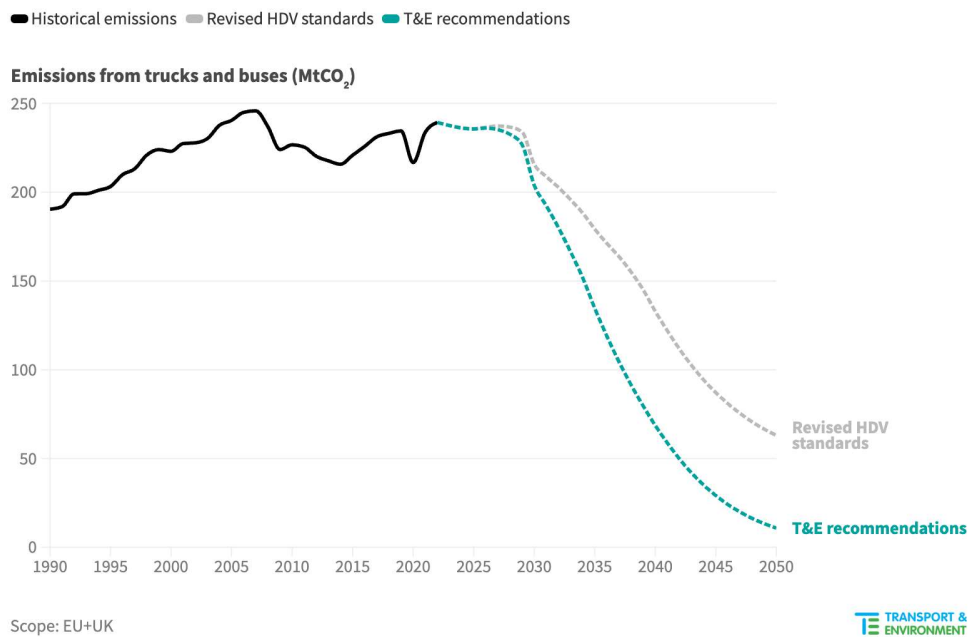


Trucks can do more heavy lifting

Truck activity in the EU has increased by 70% since 1995. Trucks accounted for 78% of all land freight activity, up from 69% in 1995, far outstripping the growth in rail freight and inland waterway transport. The Green Deal set targets for truck makers to reduce the CO₂ emissions of their trucks by 45% in 2030 and 90% in 2040.

While these new standards are world leading, they are not enough for truck emissions to be zero emissions by 2050. Given that battery electric trucks that have drive a daily distance of only 200 km are already cheaper to own and operate than diesel trucks, the standards are likely to be limiting the supply of these future trucks. In addition, European regulation on charging infrastructure will keep pace with the uptake of these trucks. That’s why T&E calls for a more ambitious uptake of electric trucks, and this can be achieved with large fleets. Companies that run big fleets of trucks also carry the majority of European freight. This acceleration would all but decarbonise trucks by 2050.

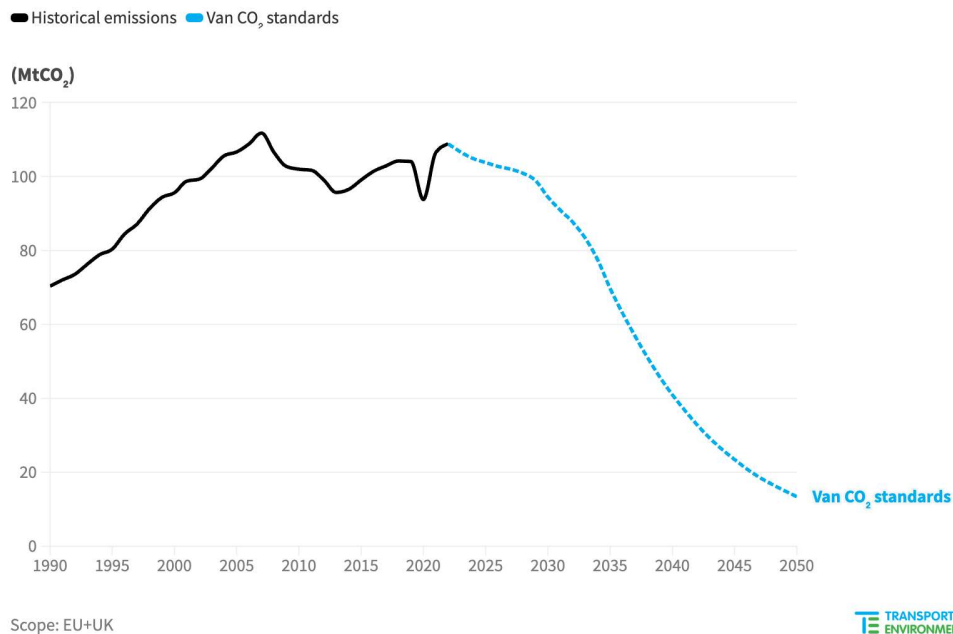
EU emissions from trucks and busses with T&E policies



Vans no longer slip through the cracks of regulation

Vans are the workhorse for many European businesses. They carry tools and equipment to work sites, deliver packages and goods, and can also provide passenger transport. Greenhouse gas emissions from vans shot up 55% in 2022 compared to 1990, the fastest growing sector in road transport. While battery electric vans are already the cheapest option for van owners, their uptake has lagged behind cars due to weaker emissions standards. T&E is currently revising what else can be done to accelerate the decarbonisation of these vehicles, from considering fleet regulation to zero emission zones in cities.

EU emissions from vans with Green Deal policies



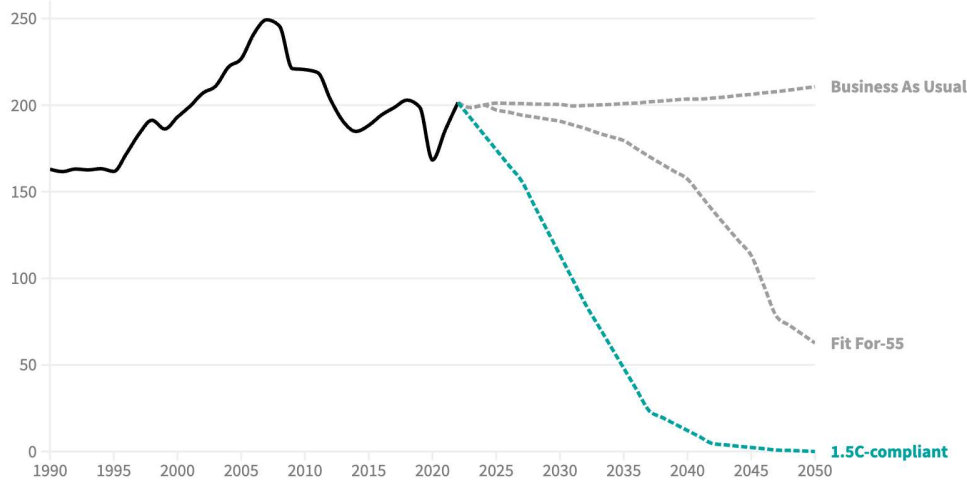
Opportunities to rapidly decarbonise ships through regional action

European shipping is responsible for about 14% of total transport emissions and this ratio is projected to reach one-third by 2050 under current policies. Around 80% of European trade is carried on ships. Ships carry oils, ores, grains, containers and passengers. They can be floating hotels or key passenger and freight links between or within European countries. Europe is leading the way in regulating their climate impact, yet existing European policies will see ships running on fossil fuels beyond mid-century.

T&E's vision for shipping couples more ambitious clean fuel uptake with rapid improvements in energy efficiency. Significant gains in energy efficiency can be achieved through slow steaming, as the speed of a ship has a cubic relationship with fuel consumption. That means if a ship reduces its speed by 5% it can reduce its fuel consumption by emissions by 14%. As a point of comparison, ships travelling from Asia to Europe are incurring a 15% distance penalty by going via the Cape of Good hope. Other energy efficiency measures that could see a larger uptake include shore side electrification, hull and propeller technologies, and wind assist. Shipping emissions could therefore be zero in 2050, with significant reductions by 2040.

Efficiency gains and stringent fuels policy can deliver mid-century decarbonisation

EU, NO, IS shipping Emissions (MtCO₂e)



Source: T&E



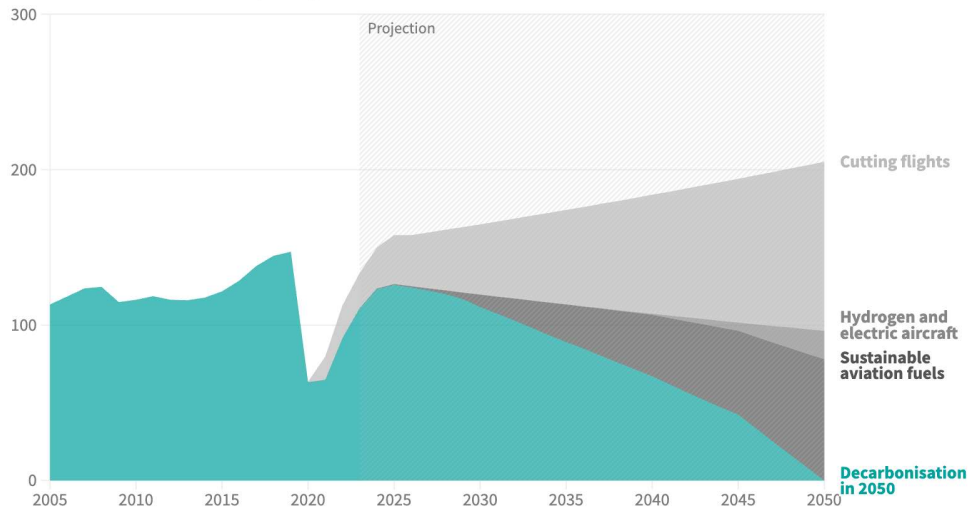
Aviation to address sky high demand and slow uptake of clean fuels

Aviation is the most climate-intensive form of transport, emitting large amounts of CO₂. It is also the means of transport with the fastest emissions growth - growth that the sector hopes and expects to propagate. Emissions from aviation in Europe have more than doubled since 1990 - emitting 147 million tonnes of CO₂ in 2019. But it's not only CO₂. Planes emit contrails, soot and nitrous oxides - so called non-CO₂ emissions. Properly accounting for non-CO₂ emissions, aviation's climate footprint is three times bigger.

Cutting flights is the only way to significantly reduce aviation's total climate impact this decade, something sustainable alternative fuels cannot achieve in the short term. Frequent flyers - less than 1% of the world's population - account for more than 50% of aviation emissions. Corporate travel is one of the biggest drivers of aviation demand. We also need to better price aviation. The sector has benefitted from years of under taxation and under regulation - amounting to €34 billion in 2022. Hydrogen or battery electric aircraft will come, but whether they make a dent in the sector's emissions this half of the century is highly dependent on Airbus' promise to deliver those aircraft. T&E's vision is capped off with more and better quality SAF, particularly e-kerosene. E-kerosene projects are still struggling to get off the ground, something EU regulators can solve if they act now to boost investments in green fuels for aviation.

EU aviation emissions from T&E policies

How to decarbonize aviation (MtCO₂)



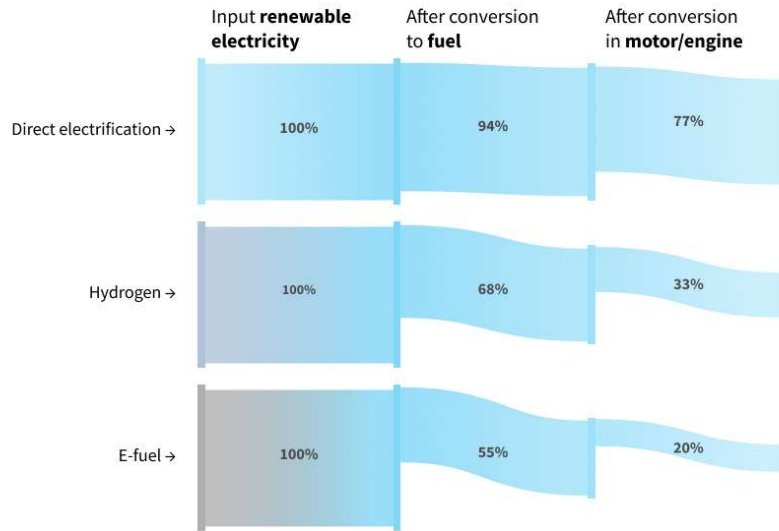
Source: T&E modelling



Efficiency matters, and so does domestic supply of energy

In order to decarbonise transport, Europe will also need to decarbonise its electricity production. With the help of the European emissions trading system (ETS) and plummeting solar and wind generation prices, renewables accounted for 44% of generation capacity in 2023. But as we electrify as much as we can, we need to make sure that we do not waste these green electrons. Our widely shared graph comparing direct electrification of cars to hydrogen or e-fueled powered cars paints a clear picture: direct electrification is almost 4 times more efficient than using e-fuels. That also means that we need to reduce the demand for e-fuels in aviation and shipping where direct electrification is not possible.

Estimate of average efficiency of different fuel types in cars



Source: Transport and Environment, based on data from Worldbank (2014), Apostolaki-Iosifidou et al. (2017), Peters et al. (2017), Larmanie et al. (2012), Umweltbundesamt (2019), National Research Council (2013), Ricardo Energy & Environment (2020), Delgado et al. (2017).



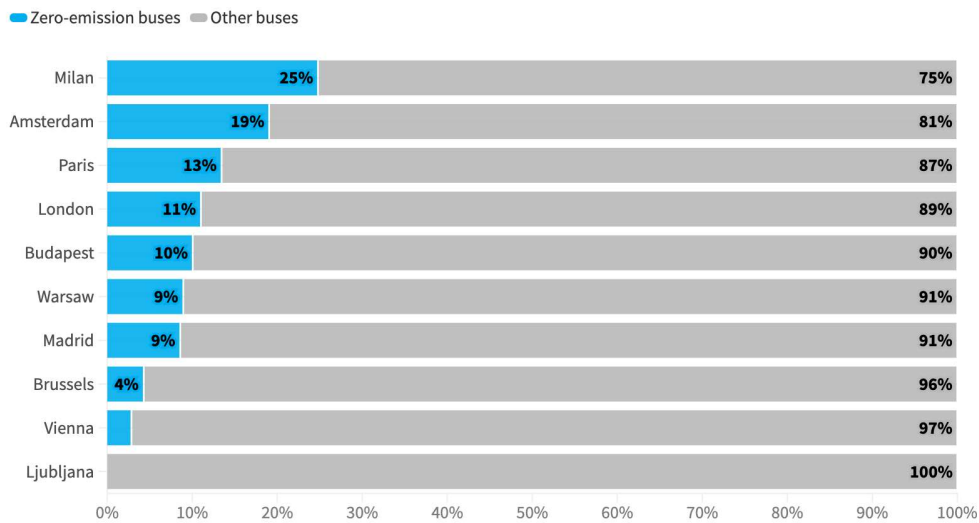
Europe's oil import dependency is above 90%. The continent also imports palm, soy and used cooking oils for refining into road fuels in the name of sustainability. Electrifying our transport system and powering it with renewable energy produced in our territory will ensure the highest standards of sustainability are met.

Cities at the forefront of a mobility transformation

Despite many journeys being relatively short in cities, and public transport, walking and cycling being available alternatives, cars still dominate in cities. Contrary to what is often assumed, car ownership has been stagnating in many major European cities for ten years or more. And several major cities, such as Brussels, London and Vienna have even seen car ownership decline since the early 2000s. This car domination is contributing to poor air quality in our cities. Road transport is responsible for 37% of dangerous Nitrogen oxide emissions (NOx).

The solutions for transforming our cities are already there. City leaders must act and roll out tried and tested measures. For example, cities can incentivise the uptake of cleaner cars through the creation of low-emission zones (LEZs) - areas in which the use of the most polluting vehicles is regulated. Coupled with rolling out cycling infrastructure and electrifying their bus fleet - ensuring they are providing a frequent, reliable and affordable service - cities can reshape how we think of mobility.

Share of zero-emission buses in major European cities



Source: Transport & Environment based on city and operator data (2023)



4. Conclusion

Transport is the largest source of greenhouse gas emissions in Europe and the only major sector of the economy that has risen since 1990. Reducing transport's climate impact and to ensure that it hits the EU's climate objectives will require sustained effort and additional policies to those agreed in the European Green Deal. These include policies on vehicle fleets, efficiency and fuels for shipping, curbing the relentless growth of transport demand by addressing infrastructure, ensuring all European transport emissions are accounted for including the non-CO2 emissions from aviation, and measures to address the existing car fleet. T&E's State of Transport will provide the latest updates and track the progress of the EU in reaching its transport climate goals.

Further information

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