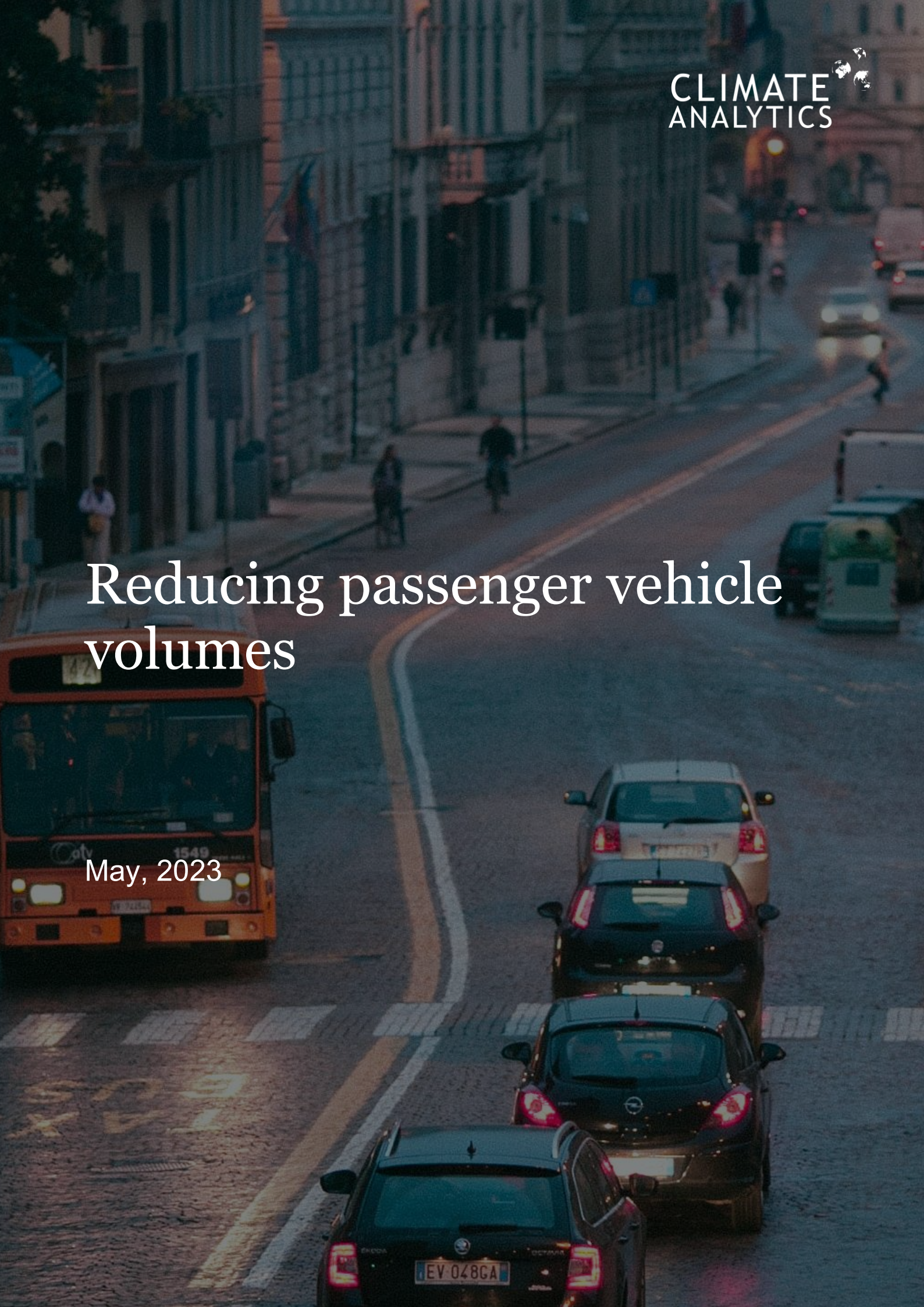

CLIMATE ANALYTICS

Reducing passenger vehicle volumes

May, 2023

AUTHORS
Andrzej Ancygier, Olivia Waterton, Sepideh Raibee

We would like to express our gratitude to the consortium members for their review and guidance in shaping this document.

CITATION AND ACKNOWLEDGMENTS

This document may be cited as:
Climate Analytics (2023). Reducing passenger vehicle volumes

Cover image: Maria Orlova

Supported by:

Federal Ministry for Economic Affairs and Climate Action

European Climate Initiative EUKI

on the basis of a decision by the German Bundestag

This project is part of the European Climate Initiative (EUKI) of the German Federal Ministry for Economic Affairs and Climate Action (BMWK). It is the overarching goal of the EUKI to foster climate cooperation within the European Union (EU) in order to mitigate greenhouse gas emissions. The opinions put forward in this publication are the sole responsibility of the author(s) and do not necessarily reflect the views of the Federal Ministry for Economic Affairs and Climate Action (BMWK).

Consortium partners:

Levegő Munkacsoport

WiseEuropa

2°C

CLIMATE ANALYTICS

Supporting science based policy to prevent dangerous climate change enabling sustainable development

Contents

Reducing passenger vehicle volumes

Fuel taxation

Fuel taxation is the most straightforward fiscal instrument aimed at changing car drivers' long-term behaviour. The measure also helps partly internalise transportation's externalities, such as the societal costs of infrastructure, congestion, health problems related to pollution, injuries and loss of life due to road accidents. Increased fuel prices may also incentivise travellers to use public or shared modes of transport, such as buses, trains or carpooling. According to calculations by Transport and Environment, with a long-term elasticity of -0.3 to -0.5 for car use, an increase in petrol, diesel and natural gas fuel taxes by 10% would decrease fuel consumption by 3-5% (Earl, 2018).

The availability of alternatives to car-based transport or alternatives to commuting entirely (e.g. home office) determines the degree to which people switch from car-based transport in reaction to higher fuel prices. If such alternatives are lacking, increased fuel taxation may decrease acceptance of both the tax and any other climate policy associated with the tax. This decreased acceptance may have high political costs for policymakers that increase fuel taxation. Policymakers can use a balanced, context-specific mix of the following three approaches to reduce the risk of a negative societal response to increased fuel taxation:

- Development of low carbon alternatives to individual car transport, e.g. development of public transport, especially in suburban and rural areas,
- promoting e-mobility (see our section on reducing emissions), and
- a partial refund of the money on a per capita basis: polluters pay more than they receive, while those switching to alternatives benefit from an additional income.

A solution adopted in some countries, e.g. in Germany, where car drivers can deduct 0.30 EUR/km of commuting from the tax base, mainly if applied only to passenger cars, counterbalances the impact of the additional fuel taxation. This may take the form of a commuter tax deduction introduced independently from the means of transportation. A commuter tax deduction reflects the "Germany" example but applies only to commuters.

Prior knowledge of the operational costs of owning a car would be helpful to the final consumers to allow informed decisions. Thus, steadily and predictably increased fuel tax can improve the impact of fuel taxation on emissions, and the social and political costs will decrease.

In July 2021, the European Commission proposed introducing an emissions trading scheme (EU ETS 2) that would, among others, cover the transport sector. Approved mid-December 2022, the new ETS would introduce a carbon price for fuels beginning in 2027. The carbon price would start low, with price-controls safeguarding against a steep rise. A 25 EUR per tonne CO_2 would translate into a 0.05 EUR per litre increase in gasoline and diesel prices. This change would be relatively close to market fluctuations. If member states achieve their respective national climate targets through other measures, the theoretical price of the new tax might even be zero. The new ETS will also establish a European Social Fund, which the member states may use to alleviate low-income citizens' burden (Proposal for a COUNCIL DIRECTIVE Restructuring the Union Framework for the Taxation of Energy Products and Electricity) (Recast), 2021).

The Commission's proposal to revise the Energy Taxation Directive (ETD) also provides an opportunity to innovate on fuel taxation policy. The legislation introduces taxation based on the energy content of fuels instead of volume, levelling the playing field and ensuring the most polluting fuels get taxed the highest (EU Emissions Trading System (EU ETS), 2022). The rate for conventional fuels such as petrol will be the highest, at EUR 10.75/GJ when used as a motor fuel. The Commission will also adjust minimum rates for fuels to reflect current prices and remove national exemptions and tax reductions. The Commission also encourages Member States to protect low-income households and vulnerable citizens from higher taxes through lump-sum transfers or financing more energy-efficient, low-carbon goods. The introduction of emissions trading to the road transport sectors will complement the proposed revision of the ETD. Road ETS will tackle CO_2 emissions directly, while ETD will ensure that fuel taxation incentivises more efficient energy use and the use of more sustainable energy products, without a CO_2 specific tax component.

Fuel taxation examples

Sweden effectively utilises fuel taxation to decarbonise its transport sector. The country applies both a fuel excise tax and an explicit CO_2 tax on diesel and gasoline. The carbon tax's nominal rate is approximately 120 EUR per tonne of CO_2. The rates will likely increase following the revision of the ETD.

Road charging

Road charging may facilitate a shift from cars to other modes of transport, such as cycling, public transport, or railways. It may also increase the role of aviation, especially for countries with an underdeveloped railway system.

Road charging could take the form of a toll on motorways in many EU countries. Member states may charge drivers for using a specific section of the road or for a specific time on a road network. A charge of a specific section may discourage some drivers from taking a shorter, tolled route and take a longer one, increasing in emissions. If policymakers prefer this option politically, the toll should target routes where non-car alternatives exist, such as a faster railway connection.

Charging drivers for a specific time incentivizes drivers to pick faster routes, offering a distinct advantage. However, a significant decrease in the costs of a Vignette, if purchased for a longer period, may encourage drivers to stick to car transport even if in some cases train could be a better alternative. Therefore, the daily average price for a vignette should not differ much, independent from the period for which it is purchased.

In November 2021, the EU adopted the Eurovignette Directive. The Directive obliges member states to phase-out time-based vignettes for heavy-duty vehicles on the core TEN-T network within eight years. In addition, the Directive introduces a mandatory fee on air pollution for heavy-duty vehicles after a four-year transition period, applied with tolls. The directive also introduces numerous exceptions from these rules and leaves road charging almost exclusively to the member states (Ala-Honkola, 2021).

Future possibilities include a digital version of this toll, or a charging system which accounts for emissions, a so-called e-Toll. An e-Toll is a mechanism based on GPS tracking, that allows tolls to be levied without stopping vehicles. The first GPS based road charge for heavy-duty vehicles started in Germany in 2005 on the motorways. E-Toll systems can be used for both heavy and light vehicles. Poland provides one example of an effective E-toll system. The Polish E-toll tracking system uses different methods to calculate the fee – On Board Units, External Location System and mobile app e-TOLL PL. The fee depends on both the weight of the vehicle and its cargo as well as the vehicle's emission class. High emission vehicles can double total fees compared to lower emissions vehicles with the same weight. Poland’s E-Toll system began collecting tolls on motorways generally and specific sections for passenger vehicles in December 2021 (*E-TOLL*, 2021).

Car-free Sundays

Some countries and cities introduced car-free Sundays to promote a car-free way of life and alternative modes of transport. The first examples began in the 1970s during the oil crisis and have continued through the present (Norton-Taylor, 2020). For example, Bogota has made roughly 100 km of roads car-free every Sunday.

A single monthly car-free Sunday could save up to 95 thousand barrels of oil from the global oil demand (IEA, 2022). However, two factors limit the impact on emissions. First, drivers who must drive, or want to drive, may take longer routes to reach their destination. Second, drivers may take the trip on another day, artificially increasing the emissions drivers produce on the “Saturday” or “Monday”.

However, car-free Sundays may have a positive effect beyond not driving on Sunday. The car-free days help show how citizens can use the space generally assigned to car traffic more beneficially, improving support for further measures to reduce car traffic. Car-free days can also encourage using public transport among those who usually do not (Guillermoprieto, 2019).

Governments can reduce the political costs of implementing car-free Sundays and increase the long-term impact on emissions in three ways. Namely, car-free days should:

- Take place regularly or be planned well in advance to avoid surprises and improve the utilisation of space freed from cars on that day, e.g. by organising events, markets, outside cafes.
- Highlight that attractive alternatives are also available outside of car-free Sundays.
- Allow citizens to use public transportation at free or substantially reduced costs. Reducing the cost of public transport can encourage the utilisation of public transport and discourage driving longer distances around the temporary car-free zone.
- Be a part of a broader package, which includes the development of cycling lanes, pedestrian zones, and the introduction of parking fees.

Walking and cycling, one set of alternatives, also improves public health. An inactive lifestyle is associated with an increased risk for various diseases and a 20-30% increased risk of overall mortality. Car-free Sundays would do well to promote cycling and walking as alternatives equally as much as promoting the use of public transportation (*Car Free Cities: Healthier Citizens*, 2016).

Registration fee

Relatively high levels of private vehicle use remain a particularly pernicious issue for those seeking to reduce emissions from passenger transport. A registration fee for passenger cars could be an essential instrument in disincentivizing car use and thereby decreasing passenger vehicles' emissions. The fee could also address the substantial flow of imported used cars, particularly from Western European countries, which greatly increase market supply, decrease prices, and thereby increase car use (Wappelhorst, 2020).

To be compatible with the EU's freedom of trade, any registration fee for imported vehicles would have to be charged independently of origin and include used cars resold domestically. A registration fee could be staggered depending on the emissions of different kinds of cars, with zero carbon vehicles excluded from the fee until the share of newly registered electric cars reaches a certain level. Studies have shown that taxes on purchases of new (or new to that particular owner) vehicles and taxes associated with vehicle registration are likely to motivate low emission vehicle purchases most effectively (*Digitalisation for the Transition to a Resource Efficient and Circular Economy*, 2022).

Registration fee examples

France established a tax on vehicle purchases in 2008, switching from taxation based on horsepower to taxation based on carbon dioxide emissions. They instituted a notched system that placed cars into one of three groups based on emissions per km. The higher the emissions, the higher the fee (in some cases, tens of thousands of Euros). France simultaneously introduced subsidies for low-emissions cars to complete the bonus-malus scheme. Estimates suggest that this new scheme was responsible for nearly the entire decrease in emissions seen after the reform (Grommerch, 2021; Patel, 2020).

Austria levels both a VAT and fuel consumption/pollution tax (*Normverbrauchsausgabe, NoVA)* on new vehicle purchases and purchases of non-nationally registered cars. The maximum rate for passenger cars is 32% plus any applicable malus fee. The NoVA formula for passenger cars is:

NoVA = [(CO_2 emissions in g/km-115)/5] + NoVA malus fee if applicable – 350 EUR.

Zero emissions vehicles (e.g. electric vehicles) are not charged a NoVA, and other reductions or exemptions are available based on the particularities of the purchase and/or car.

Car sharing

Car ownership incentivises car use. People often use a private car, even if an attractive alternative is available, because "it's there". Car sharing may reduce activity levels of passenger cars by reducing car ownership. Since people could rely on car sharing for the rare cases that a car is needed, some car owners may decide to give up ownership completely or at least reduce the number of cars in the household.

Other alternatives (e.g. public transport, cycling, train) must provide the backbone of municipal transport, with car sharing only serving in exceptional cases. However, car sharing on its own provides several benefits. Due to higher utilisation rate per car, car sharing also makes car electrification more cost-effective. Decreasing car ownership would also reduce the need for parking spaces. Finally, giving up a car results in significant personal savings in terms of car depreciation, costs of insurance, and parking fees.

To reduce the need for car ownership and incentivise other, less emissions intensive modes of transport, car sharing should meet the following criteria:

- Be available for one-way trips between cities and across borders. While car sharing can only be competitive if it reaches certain reliability, availability, and convenience rates, car sharing can most effectively decrease car ownership when used for episodic or business (especially one-way) trips. Episodic car sharing will serve multimodality purposes as well as solving first-last mile challenges.

- Provide a temporary backup for other means of transport. While the car ownership model can only be competitive to its providers after reaching a certain utilisation rate, car sharing can contribute to decreasing car ownership if it is available on routes where other alternatives are temporarily not available - e.g. due to construction or night time.
- Assurance that enough vehicles are available in high demand areas. Policymakers must conduct an in-depth assessment of local transport needs in order to balance high utilisation per vehicle (in the interest of car sharing providers) and a high availability of vehicles (which is essential for car owners willing to resign from their car).
- Ensuring that the cars to be rented are adapted to specific needs. Cars must be suitable for transporting certain products (some of which cannot be transported on foot/public transport), kids, or pets. The service should offer the possibility to choose the type of gearbox, number of seats, and cargo capacity in order to suit the varying needs of the general public.

In each of these cases, the interests of the car sharing companies may not necessarily correspond with public interests. For example, car sharing operators may target customers who would otherwise use public transport. Car sharing providers may also ignore areas where car sharing could decrease in car ownership, but the utilisation rate would be much lower than in the city centre, where car ownership is already low. Governments should account for these differences and develop an optimal compromise when issuing operating licences.

Rethinking preferences for company cars

Cars provided by private companies for employees (company cars) significantly diminish people's willingness to reduce activity levels. The perception of travelling "for free" results in using passenger cars instead of options that could otherwise be cheaper, e.g. a train. In addition to the emissions, subsidies for company cars come at a significant cost to the whole economy: companies purchasing cars can deduct the VAT and write off the car's depreciation from their taxes. According to the calculations by Transport & Environment, these write-offs and subsidies cost EUR 32 billion annually in the EU (Lopez, 2020). In Germany alone, private utilisation of company cars reduced tax proceeds by EUR 3 billion in 2018 (Bretschneider & Burger, 2021).

Governments should reduce deductions for purchasing and using company cars to areas in which no other means of transport can be used. These deductions should focus on specific companies (e.g. construction, delivery) and cars (e.g. only construction vehicles or vans). Denmark provides one interesting method. As of 1 July 2021, employers using company cars for private purposes have to pay an additional tax (*Skat.dk*, 2021). The level of the tax depends on the value of the car plus an environmental supplement. Another option that could avoid using company cars for private purposes, without using taxes, could be clearly marking company cars and banning their usage over the weekend.

Parking fees

Charging for public parking spaces, especially in urban areas, is one of the most common methods local governments use to reduce car utilisation. Local governments can easily justify parking fees: Parking space is one of the most inefficient uses of public space (Lukács, 2006). However, introducing parking fees sparks opposition among car owners, who are accustomed to free parking.

Fees may come at a significant political cost to the decision makers, who would risk potentially losing elections, if new measures do not encourage citizens beyond the resulting decrease in popularity. Many measures can reduce the political cost of introducing or increasing parking fees. The best mix of measures may differ depending on whether commuters or visitors primarily use a space.

Policymakers should account for the following guidelines in parking spaces used mostly by commuters:

- **Predictability and steady increases:** knowing that previously free parking spaces will have fees months in advance allows commuters to adjust their decisions, e.g. no longer driving.
- **Availability of alternative modes of transport:** the introduction or increase of charges for parking space must come hand in hand with the expansion of the public mode of transport. Policymakers should expect that introduction of charges for public parking in areas close to the biggest employers will result in much higher utilisation of the existing alternative forms of transport (e.g. metro). Policymakers must increase and improve access to alternative forms of transport.
- **Free parking spaces at the outskirts of the city:** Policymakers should provide free parking near public transport centres for suburban commuters. To promote electric mobility, the parking spaces could also have charging stations.
- **Introducing employee tickets:** Commuters situated in areas affected by parking fees should be allowed to benefit from public transport tickets, preferably through a reduced rate for parking. These public tickets could be co-financed by the local authorities from the additional income resulting from the fees.
- **Promoting low carbon modes of transport:** Policymakers might **temporarily** consider lowering charges for low emission vehicles and ZEVs. However, by the 2030s at the latest, most cars will belong to this category. Policymakers should therefore make this credit temporary or limit the credit areas for which other uses for the space are not possible.
- **Local dividends from fees:** Local governments should distribute of resources from the parking fees equally to the residents in the district through of a monthly payment to everyone (*It Is Essential to Transform Budapest's Parking Subsidy System*, 2020).

For parking spaces used intermittently e.g., by tourists or customers:

- Policymakers could consider creating a limited number of free parking spaces for certain times (e.g. one hour), in order to reduce opposition by businesses.
- In other areas, charging for parking spaces could increase for each additional hour to discourage long-term parking.
- Fees may also increase automatically if a certain share of parking spaces are already taken up. In this system, parking space would always be available, but at a higher price. If all parking spaces in a certain area are charged at the same higher rate, drivers may decrease their tendency to drive around in search for an available parking space.

Charging for parking spaces will reduce the number of parked cars significantly, especially if alternatives (possibly co-financed from the fee's proceeds) are available. To increase this policy's popularity, the newly won space should be used in a way that maximises its benefits for the population. Examples include green spaces, outside cafes, or cycling lanes.

Coordinating carpooling

Carpooling refers to a practice where passengers travelling on the same route share one car instead of driving alone. Carpooling may apply to regular commuting or irregular intercity travels, even across borders. Social media (e.g. Facebook) and private initiatives (e.g. Blabla car or Telekocsi) have been very effective in coordinating such travels. In terms of intercity travels, carpooling may, in most cases, compete with less carbon intensive modes of transport such as trains or cycling. Therefore, promoting additional carpooling may have a minimal impact on reducing emissions.

However, policymakers should strongly encourage carpooling for regular commuting. Carpooling will be most helpful to workplaces without good connections to public transport. Employers can take the initiative to help employees find the optimal carpooling arrangement or alternative. Cars used for carpooling should also receive preferential treatment. For example, cars used for carpooling could access parking space closer to the entrance or charging station for electric vehicles. Finally, the shifts of the employees should take into consideration the carpooling needs. For example, employees using the same carpooling option should be allowed to start and finish work simultaneously, if possible. Adequate tax policy should strongly encourage such practices.

Transboundary commuting provides a special case of carpooling. In this case, the distances that the employees are ready to travel are much larger, often due to significant differences in wages. At the same time, public transport options are mostly non-existent. Especially in this case, employees should consider establishing regular connections (e.g. by bus) from a point that the largest number of employees can reach independently.

Preferential treatment for fuller cars

Policymakers can promote carpooling with favourable conditions for cars containing multiple occupants on main city roads, instead of vehicles with only one occupant. There are several policies that can motivate carpooling and higher occupancy levels in private passenger vehicles. Examples include low or no charges on paid roads or bridges or permission to use special lanes (e.g., bus lanes). These policies could include:

- Introducing High Occupancy Vehicle (HOV) lanes on main motorways. Typically these lanes allow passenger vehicles with two or more passengers to use dedicated lanes or to access bus lanes. They may only be allowed during peak hours, or on specific days, and certain vehicles such as low- or no-emissions cars are often exempted (Transport Canada, 2012).
    - The minimum number of passengers needed for a car to qualify as an HOV and benefit from HOV policies (e.g. special lanes, low charges) should depend on local needs.
    - Policymakers ought to combine HOV lanes with other policies to maximise the benefit. HOV lanes on their own may be questionable (Wiseman, 2019).
- Introduce High Occupancy Toll (HOT) lanes. Like HOV lanes, HOT lanes are dedicated toll lanes only for high occupancy vehicles, prioritising them over low occupancy vehicles and incentivising carpooling or ride sharing.
    - A variant of this policy allows permitted access to HOV lanes for single occupancy vehicles upon payment of a fee. Proponents argue that this variant would raise revenue and motivate the use of public transport or other lower cost options. Opponents find that this system may incentivise those who can afford to pay the fee to drive alone (*HOV/HOT Lanes*, 2008).
- Partner with workplaces to reduce individual barriers to carpooling and ride-sharing by:
    - facilitating carpool organisation through online matching programs (Kaplowitz & Slabosky, 2018)
    - creating parking places or permits specifically for carpooling vehicles and/or reducing fees for said spaces
    - introducing guaranteed ride home programs by partnering with car-share or taxi companies and public transportation to ensure a ride home in case of emergency (*Guaranteed Ride Home*, 2020)
    - creating designated pick-up and drop-off points at park and ride locations to facilitate easier ridesharing (see also: the practice of slugging in the Washington D.C. metro area; (*About Slugging*, 2020))

Carpooling examples

Australia established a nationwide law in 2017 which established that passenger cars can only use transit lanes when carrying more than 1 passenger. Proponents of this policy argued that it would lead to significant reductions in congestion, allow for more flexibility in the face of significant population growth, and provide at a relatively low cost compared to other interventions.

In the private sector, Nike incentivises carpooling among employees at its Portland (US) headquarters through an in-house rideshare matching service. The service prioritised parking for carpooling vehicles and establishing a guaranteed ride home program with the local transit authority. Nike management has also used flexible working hours to ensure that any complications from carpooling do not penalise workers. Nike's flexibility and innovative policies make the company consistently rank as one of the best workplaces for commuters (Luten et al., 2004).

References

6 Ways Hydrogen and Fuel Cells Can Help Transition to Clean Energy. (n.d.). *Canadian Hydrogen and Fuel Cell Association*. Retrieved February 28, 2022, from http://www.chfca.ca/fuel-cells-hydrogen/6-ways-hydrogen-and-fuel-cells-can-help-transition-to-clean-energy/

About Car-Pass. (n.d.). Car-Pass. Retrieved March 30, 2022, from https://www.car-pass.be/en/about-car-pass

About Slugging. (2020, January 31). Slug Lines. http://www.slug-lines.com/

Ala-Honkola, P. (2021, November 9). *Eurovignette road charging reform adopted by Council*. Council of the EU. https://www.consilium.europa.eu/en/press/press-releases/2021/11/09/eurovignette-road-charging-reform-adopted-by-council/

An, D.-S., & Ohm, B. (2016). *Analysis of Noise Level by Chang of Vehicle Speeds at Different Types of Vehicle*. https://www.semanticscholar.org/paper/Analysis-of-Noise-Level-by-Chang-of-Vehicle-Speeds-An-Ohm/d5f63648eafb17b67c30327009a7eb366738a016

Archie, A. (2022, March 25). California's governor is proposing $11 billion of relief from record gas prices. *NPR*. https://www.npr.org/2022/03/25/1088711551/california-gas-prices-gas-taxes-holiday-record

[ARCHIVED CONTENT] Freight Best Practice | Business Link. (2011, November 6). Freight Best Practice. https://webarchive.nationalarchives.gov.uk/ukgwa/20110617184121/http://www.businesslink.gov.uk/bdotg/action/detail?itemId=1085326825&type=CAMPAIGN

Barclay, E. (2016, October 9). *Bogotá closes its roads every Sunday. Now everyone wants to do it.* Vox. https://www.vox.com/2016/10/9/13017282/bogota-ciclovia-open-streets

Barkenbus, J. N. (2010). Eco-driving: An overlooked climate change initiative. *Energy Policy*, *38*(2), 762–769. https://doi.org/10.1016/j.enpol.2009.10.021

Barth, M., Mandava, S., Boriboonsomsin, K., & Xia, H. (2011). Dynamic ECO-driving for arterial corridors. *2011 IEEE Forum on Integrated and Sustainable Transportation Systems*, 182–188. https://doi.org/10.1109/FISTS.2011.5973594

Bauen, A., O'Connor, D., Edwards, R., Fabiosa, J., Laborde, D., Malins, C., Overmars, K., & Plevin, R. (2015). *The land use change impact of biofuels consumed in the EU* (No. BIENL13120; p. 261). European Commission.

Boriboonsomsin, K., Vu, A., & Barth, M. (2010). *Eco-Driving: Pilot Evaluation of Driving Behavior Changes Among U.S. Drivers*. https://escholarship.org/uc/item/9z18z7xq

Bretschneider, D. W., & Burger, A. (2021). *Umweltschädliche Subventionen in Deutschland: Aktualisierte Ausgabe 2021* (No. 143; p. 161). Umweltbundesamt. https://www.umweltbundesamt.de/sites/default/files/medien/479/publikationen/texte_143-2021_umweltschaedliche_subventionen.pdf

BVG Berlin plans implementation of hybrid trolleybuses. (2020, March 3). *Urban Transport Magazine*. https://www.urban-transport-magazine.com/en/bvg-berlin-plans-implementation-of-hybrid-trolleybuses/

Caban, J., Vrábel, J., Šarkan, B., & Ignaciuk, P. (2019). About eco-driving, genesis, challenges and benefits, application possibilities. *Transportation Research Procedia*, *40*, 1281–1288. https://doi.org/10.1016/j.trpro.2019.07.178

Camea. (n.d.). *Noisy Speeding: Impact of Speed on Noise Level*. Retrieved March 25, 2022, from https://www.cameatechnology.com/articles/noisy-speeding-impact-of-speed-on-noise-level/

Canada Hydrogen and Fuel Cell Association. (2022). 6 Ways Hydrogen and Fuel Cells Can Help Transition to Clean Energy. *CHFCA*. https://www.chfca.ca/fuel-cells-hydrogen/6-ways-hydrogen-and-fuel-cells-can-help-transition-to-clean-energy/

Casinge, E. (2015, April 29). *Parliament rubber stamps EU biofuels reform amid final controversy*. Www.Euractiv.Com. https://www.euractiv.com/section/transport/news/parliament-rubber-stamps-eu-biofuels-reform-amid-final-controversy/

Chang, M., Wiegmann, J., Smith, A., & Bilotto, C. (2008). *A Review of HOV Lane Performance and Policy Options in the United States* (FHWA-HOP-09-029). Federal Highway Administration, U.s. Department of Transportation. https://ops.fhwa.dot.gov/publications/fhwahop09029/sec1_introduction.htm

Company car. (2021). skat.dk. https://skat.dk/skat.aspx?oid=2244345

Data and statistics. (n.d.). Retrieved March 25, 2022, from https://www.euro.who.int/en/health-topics/environment-and-health/noise/data-and-statistics

Data Europa EU. (2015). *Flash Eurobarometer 312: Future of transport* (Eurobarometer). Directorate General for Communication. https://data.europa.eu/data/datasets/s959_312?locale=en

Deloitte China, & Ballard. (2020). *Fueling the Future of Mobility Hydrogen and fuel cell solutions for transportation*. Deloitte China, Ballard. https://www2.deloitte.com/content/dam/Deloitte/cn/Documents/finance/deloitte-cn-fueling-the-future-of-mobility-en-200101.pdf

Digitalisation for the transition to a resource efficient and circular economy (OECD Environment Working Papers No. 192; OECD Environment Working Papers, Vol. 192). (2022). https://doi.org/10.1787/6f6d18e7-en

Dinh, D. D., & Kubota, H. (2013). Drivers' perceptions regarding speeding and driving on urban residential streets with a 30km/h speed limit. *IATSS Research*, *37*(1), 30–38. https://doi.org/10.1016/j.iatssr.2012.12.001

Directorate-General for Mobility and Transport. (2022). *Road charging*. Mobility and Transport | European Commission. https://transport.ec.europa.eu/transport-modes/road/road-charging_en

Do lower speed limits on motorways reduce fuel consumption and pollutant emissions? (2020, November 23). [Page]. European Environment Agency. https://www.eea.europa.eu/themes/transport/speed-limits-fuel-consumption-and

Donath, A. (2021, December 22). *BVG: Berlin schafft 90 weitere E-Busse an - Golem.de*. Golem.de. https://www.golem.de/news/bvg-berlin-schafft-90-weitere-e-busse-an-2112-161968.html

Dragonetti, W. (2020, December 8). *Bilbao: Slow and steady for the win - Eurocities*. https://eurocities.eu/latest/bilbao-slow-and-steady-for-the-win/

Driving in Switzerland. (n.d.). Retrieved March 30, 2022, from https://www.zuerich.com/en/visit/driving-in-switzerland

Earl, T. (2018). *Roadmap to Decarbonising European Cars*. Transport & Environment. https://www.transportenvironment.org/wp-content/uploads/2021/07/2050_strategy_cars_FINAL.pdf

Edelstein, S. (2016, August 18). *Why motorcycles may not be greener than cars: Missing emission gear*. Green Car Reports. https://www.greencarreports.com/news/1105626_why-motorcycles-may-not-be-greener-than-cars-missing-emission-gear

Efficient Public Sector Fleet Operations (Freight Best Practice). (2007). Department for Transport. https://postconflict.unep.ch/humanitarianaction/documents/02_08-04_06-24.pdf

Element Energy Ltd. (2017). *The Economic Case of Hydrogen Busses in Europe*. Ballard Power Systems.

England's first double-decker hydrogen buses to launch in London. (2021, June 23). *BBC News*. https://www.bbc.com/news/uk-england-london-57578043

Estrada, M., Mension, J., & Salicrú, M. (2017, October 1). *Opportunity Charging of Busses: Effescts on bus operator costs and user performance*. European Transport COnference, Barcelona.

E-TOLL. (2021). https://etoll.gov.pl/

EU Emissions Trading System (EU ETS). (2022). https://ec.europa.eu/clima/eu-action/eu-emissions-trading-system-eu-ets_en

Proposal for a regulation of the European Parliament and of the Council amending Regulation (EU) 2019/631 as regards strengthening the CO2 emission performance standards for new passenger cars and new light commercial vehicles in line with the Union's increased climate ambition, no. 2019/631 (2019). https://eur-lex.europa.eu/legal-content/en/TXT/?uri=CELEX:52021PC0556

Proposal for a Council Directive restructuring the Union framework for the taxation of energy products and electricity (recast), (2021) (testimony of European Commission). https://eur-lex.europa.eu/legal-content/en/TXT/?uri=CELEX:52021PC0563

Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee, and the Committee of the Regions "Fit for 55": Delivering the EU's 2030 Climate Target on the way to climate neutrality, no. Com(2021) 550 Final (2021). https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52021DC0550

Proposal for a regulation of the European Parliament and of the Council amending Regulation (EU) 2019/631 as regards strengthening the CO2 emission performance standards for new passenger cars and new light commercial vehicles in line with the Union's increased climate ambition, no. COM(2021) 556 final, European Commission (2021). https://eur-lex.europa.eu/legal-content/en/TXT/?uri=CELEX:52021PC0556

Regulation (EU) No 168/2013 of the European Parliament and of the Council of 15 January 2013 on the approval and market surveillance of two- or three-wheel vehicles and quadricycles (Text with EEA relevance), (2016). http://data.europa.eu/eli/reg/2013/168/2016-01-01/eng

Regulation (EU) 2019/631 of the European Parliament and of the Council of 17 April 2019 setting CO2 emission performance standards for new passenger cars and for new light commercial vehicles, and repealing Regulations (EC) No 443/2009 and (EU) No 510/2011 (Text with EEA relevance.), 111 OJ L (2019). http://data.europa.eu/eli/reg/2019/631/oj/eng

Regulation (EU) 2019/2144 of the European Parliament and of the European Council, OJL 325/1 (2019). https://eur-lex.europa.eu/eli/reg/2019/2144/oj

EV Database. (2022). *Range*. EV Database. https://ev-database.org/cheatsheet/range-electric-car

Figaszewski, M. (2021, July 2). *Heilbronn district in Germany opts for hydrogen*. Solaris Bus. https://www.solarisbus.com/en/press/heilbronn-district-in-germany-opts-for-hydrogen-1565

Flash Eurobarometer 312: Future of transport—Data Europa EU. (n.d.). Retrieved February 28, 2022, from https://data.europa.eu/data/datasets/s959_312?locale=en

Free buses to give Tasmanian commuters a break from skyrocketing fuel prices. (2022, March 21). *ABC News*. https://www.abc.net.au/news/2022-03-22/free-buses-to-offset-rocketing-fuel-prices-in-tasmania/100928750

Freight Best Practice. (2007, January 7). [Text]. Transport Business. https://www.transportbusiness.net/features/freight-best-practice

Gindrat, R. (2019, June 6). *Autonomous Vehicles: To Park Or Not to Park?* Forbes. https://www.forbes.com/sites/forbestechcouncil/2019/06/06/autonomous-vehicles-to-park-or-not-to-park/

Graham, J. (2020). *E-Bus Economics: Fuzzy Math?* (Electric Vehicles 101). International Finance Corporation.

Gressai, M., Varga, B., Tettamanti, T., & Varga, I. (2021). Investigating the impacts of urban speed limit reduction through microscopic traffic simulation. *Communications in Transportation Research*, *1*, 100018. https://doi.org/10.1016/j.commtr.2021.100018

Grommerch, C. (2021, January 20). France: A severe 'Ecotax' for newly registered cars. *2Celsius*. https://2celsius.org/france-a-severe-ecotax-for-newly-registered-cars/

Guaranteed Ride Home. (2020). Commutter Connections. https://www.commuterconnections.org/guaranteed-ride-home/

Guillermoprieto, A. (2019, March 27). *Bogotá, Colombia's Ciclovía bans cars every Sunday, and people love it*. National Geographic. https://www.nationalgeographic.com/environment/article/bogota-colombia-ciclovia-bans-cars-on-roads-each-sunday

H2Bus Europe Deployment. (2022). H2Bus. https://h2bus.eu/deployment

Hoonsiri, C., Kiattikomol, V., & Chiarakorn, S. (2020). Energy Saving and CO2 Reduction Potential from Partial Bus Routes Reduction Model in Bangkok Urban Fringe. *Energies*, *13*(22), Article 22. https://doi.org/10.3390/en13225963

HOV/HOT Lanes. (2008, June 3). Metropolitan Transportation Commission. https://web.archive.org/web/20080603081534/http://www.mtc.ca.gov/planning/hov/faq.htm

Huang, Y., Ng, E. C. Y., Zhou, J. L., Surawski, N. C., Chan, E. F. C., & Hong, G. (2018). Eco-driving technology for sustainable road transport: A review. *Renewable and Sustainable Energy Reviews*, *93*, 596–609. https://doi.org/10.1016/j.rser.2018.05.030

IEA. (2021). *Global Fuel Economy Initiatve 2021*. IEA. https://www.iea.org/reports/global-fuel-economy-initiative-2021/executive-summary

IEA. (2022). *A 10-point Plan to Cut Oil Use*. International Energy Agency. https://www.iea.org/news/emergency-measures-can-quickly-cut-global-oil-demand-by-2-7-million-barrels-a-day-reducing-the-risk-of-a-damaging-supply-crunch

IFPEN | All about hydrogen. (n.d.). IFPEN. Retrieved February 28, 2022, from https://www.ifpenergiesnouvelles.com/issues-and-foresight/decoding-keys/renewable-energies/all-about-hydrogen

İmre, Ş., & Çelebi, D. (2017). Measuring Comfort in Public Transport: A case study for İstanbul. *Transportation Research Procedia*, *25*, 2441–2449. https://doi.org/10.1016/j.trpro.2017.05.261

Interdiction des 2RM (scooters et motos) thermiques à Paris. (n.d.). idee.paris. Retrieved April 13, 2022, from https://idee.paris.fr/projects/projet-de-plan-damelioration-de-lenvironnement-sonore-2021-2026/consultation/donnez-votre-avis-sur-le-plan-damelioration-de-lenvironnement-sonore-de-la-ville-de-paris/opinions/bruit-dans-lenvironnement/interdiction-des-2rm-scooters-et-motos-thermiques-a-paris

International Road Transport Union. (2022). *ECO-Driving*. https://www.iru.org/iru-academy/programmes/eco-driving

Iotkovska, S. (2021, April 5). *Denmark proposes the introduction of car-free Sundays*. https://www.themayor.eu/en/a/view/car-free-sundays-may-be-introduced-in-denmark-7595

It is essential to transform Budapest's parking subsidy system (G. Lakos, Trans.). (2020, April 9). Levego Munkacsoport. https://www.levego.hu/en/news/2020/04/a-fovarosi-parkolasi-tamogatasi-rendszer-atalakitasa-elengedhetetlen/

Johnson, C., Nobler, E., Eudy, L., & Jeffers, M. (2020). *Financial Analysis of Battery Electric Busses* (Technical Report NREL/TP-5400-74832). National Renewable Energy Laboratory, U.S. Department of Energy.

Johnson, W. (2019). Here's Why a Hydrogen Combustion Engine Will Never Be Popular. *MotorBiscuit*. https://www.motorbiscuit.com/heres-why-a-hydrogen-combustion-engine-will-never-be-popular/

Kaplowitz, S. A., & Slabosky, A. (2018). Trying to Increase Carpooling at a Major U.S. University: A Survey and an Intervention. *Sustainability*, *11*(2), 74–80. https://doi.org/10.1089/sus.2017.0020

Kim, H., Hartmann, N., Zeller, M., Luise, R., & Soylu, T. (2021). Comparative TCO Analysis of Battery Electric and Hydrogen Fuel Cell Buses for Public Transport System in Small to Midsize Cities. *Energies*, *14*(14), Article 14. https://doi.org/10.3390/en14144384

Korea Environment Corporation. (2017). *Vehicle and Engines Certification Test*. Promotion of Vehicle Environment Business. https://www.keco.or.kr:443/en/core/climate_promotion1/contentsid/1949/index.do?

Kuva, H. (2021, November 30). *Covid-19 boosts e-bike sales in Finland*. Bike Europe. https://www.bike-eu.com/41782/covid-19-boosts-e-bike-sales-in-finland

Litman, T. (2021). *Evaluating Public Transit Benefits and Costs: Best Practices Guidebook*. 141.

LiveWire Motorrad | Harley-Davidson Deutschland. (n.d.). Harley-Davidson. Retrieved April 13, 2022, from https://www.harley-davidson.com/de/de/motorcycles/2021/livewire.html

Lopez, S. (2020). *Comapny Cars: How European governments are subsidising pollution and climate change*. Transport & Environment. https://www.transportenvironment.org/wp-content/uploads/2021/07/2020_10_Company_cars_briefing.pdf

Low Emission Zone. (2022). LEZ.Brussels. https://www.lez.brussels/mytax/en/

Lukács, A. (2006). *Car as a Means of Tax Evasion in Hungary*. Levego Munkacsoport. https://www.levego.hu/sites/default/files/szgk_adocsalas.pdf

Luten, K., Binning, K., Driver, D., Hall, T., & Schreffler, E. (2004). *Mitigating Traffic Congestion—The Role of Demand-Side Strategies* (FHWA-HOP-05-001). Federal Highway Administration, U.S. Department of Transportation. https://ops.fhwa.dot.gov/publications/mitig_traf_cong/nike_case.htm

Mackinger, G., Lenz, E., Bartlomiejczyk, M., Bakchaus, W., & Krolkov, S. (2019). *In Motion Charging* (Knowledge Brief). UITP.

Mackinger, G., Lenz, E., Bartlomiejczyk, M., Bakchaus, W., & Krolkov, S. (2020). *Infrastructure for In-Motion Charging Trolleybusses* (Knowledge Brief). UITP.

Marshall, A. (2014a, July 4). *Are you ready for a cashless bus service?* Which? Conversation. https://conversation.which.co.uk/technology/cashless-london-buses-oyster-contactless-payment/

Marshall, A. (2014b, July 4). *London buses go cashless – are you ready?* Which? Conversation. https://conversation.which.co.uk/technology/cashless-london-buses-oyster-contactless-payment/

Meishner, F., & Uwe Sauer, D. (2020). Technical and economic comparison of different electric bus concepts based on actual demonstrations in European cities. *IET Electrical Systems in Transportation*, *10*(2), 144–153. https://doi.org/10.1049/iet-est.2019.0014

Mestre, C. (2021, April 20). *Europe's imports of dubious 'used' cooking oil set to rise, fuelling deforestation*. Campaigning for Cleaner Transport in Europe | Transport & Environment. https://www.transportenvironment.org/discover/europes-imports-dubious-used-cooking-oil-set-rise-fuelling-deforestation/

Mobility and transport. (n.d.). Retrieved March 25, 2022, from https://transport.ec.europa.eu/index_en

Moultak, M., Lutsey, N., & Hall, D. (2017, September 26). Transitioning to zero-emission heavy-duty freight vehicles. *International Council on Clean Transportation*. https://theicct.org/publication/transitioning-to-zero-emission-heavy-duty-freight-vehicles/

NC Clean Energy Technology Center (Director). (2015, June 12). *Eco-Driving Training*. https://www.youtube.com/watch?v=LWEnzW0x8F0

Neuerer, D. (2021, July 9). *Klimaschutz: Steigender Benzinpreis: Oberster Verbraucherschützer fordert Reform der Pendlerpauschale*. Handelsblatt. https://www.handelsblatt.com/politik/deutschland/klimaschutz-steigender-benzinpreis-oberster-verbraucherschuetzer-fordert-reform-der-pendlerpauschale/27589162.html

Norton-Taylor, R. (2020, November 4). Netherlands introduces car-free Sundays—Archive, 1973. *The Guardian*. https://www.theguardian.com/world/from-the-archive-blog/2020/nov/04/netherlands-introduces-car-free-sundays-archive-1973

Other 30 cities: Grenoble (France). (2021). City 30. https://city30.brussels/other-30-cities-grenoble-france

Overhead fast charging system for electric buses from Fraunhofer and partners. (2015, June 1). Green Car Congress. https://www.greencarcongress.com/2015/06/20150601-edda.html

Patel, T. (2020, October 9). Porsche, Ferrari Cars Face $59,000 Gas-Guzzlers Tax in France. *Bloomberg.Com*. https://www.bloomberg.com/news/articles/2020-10-09/porsche-and-ferrari-face-59-000-tax-on-gas-guzzlers-in-france

Piątek, P. (2021, December 7). *ISA. System sam zadba o to byśmy nie przekraczali dozwolonej prędkości*. Motofakty.pl. https://www.motofakty.pl/artykul/isa-system-sam-zadba-o-to-bysmy-nie-przekraczali-dozwolonej-predkosci.html

Pocard, N. (2021, June 10). *4 Ways to Improve Public Transport (With Input From the Public)*. Ballard. https://blog.ballard.com/4-ways-to-improve-public-transport

Polish News. (2022, January 27). Warsaw. Town Hall: The most effective bus lane on the Łazienkowska Route. *Polish News*. https://polishnews.co.uk/warsaw-town-hall-the-most-effective-bus-lane-on-the-lazienkowska-route/

Ralston, W. (2020, November 30). How Shenzhen turned all its 16,000 buses fully electric. *Wired UK*, *Nov/Dec 2020*. https://www.wired.co.uk/article/shenzhen-electric-buses-public-transport

Range of full electric vehicles. (n.d.). EV Database. Retrieved February 28, 2022, from https://ev-database.org/cheatsheet/range-electric-car

Romjue, M. (2021, December 7). *Preparing Your Organization for Fleet Electrification*. ChargedFleet. https://www.chargedfleet.com/10157366/the-many-factors-to-balance-when-electrifying-fleets

Samaras, C. (2012, May 20). *Optimal Car Average Speed For Minimum Fuel Consumption*. My Engineering World. https://myengineeringworld.net/2012/05/optimal-speed-for-minimum-fuel.html

Sarabia, L. (2020, August 5). From diesel to ZEVs: How electric bus conversions could bring new life to transit fleets. *Electric Autonomy Canada*. https://electricautonomy.ca/2020/08/05/mtb-diesel-electric-bus-conversions/

Sawilla, S. (2021). Wireless opportunity charging buses. As a result, smaller batteries needed. *IPT Technology*. https://ipt-technology.com/case-opportunity-charging-madrid/

SCU, T. U. of the W. of E. (Ed.). (2016). *Car Free Cities: Healthier citizens* (Science for Information Policy). European Commission DG Environment News Alert Service. https://ec.europa.eu/environment/integration/research/newsalert/pdf/car_free_cities_healthier_citizens_476na1_en.pdf

Speed limits. (2022, March 3). Berlin Senate Department for the Environment, Urban Mobility, Consumer Protection and Climate Action. https://www.berlin.de/sen/uvk/en/traffic/transport-policy/speed-limits/

Stiffler, L. (2022, January 24). *How new rebates could spur widespread adoption of electric vehicles in Washington state*. GeekWire. https://www.geekwire.com/2022/how-new-rebates-could-spur-widespread-adoption-of-electric-vehicles-in-washington-state/

Stoll, J. (2022, March 10). *Sparsam durch die Energiekrise* [Text]. Umweltbundesamt; Umweltbundesamt. https://www.umweltbundesamt.de/presse/pressemitteilungen/sparsam-durch-die-energiekrise

Stolzenburg, K., Whitehouse, N., & Whitehouse, S. (2020). *Fuel Cell Busses: Best Practices and Commercialisation Approaches* (Knowledge Brief). UITP.

Strefa tempo 30. (n.d.). Retrieved February 28, 2022, from https://www.katowice.eu/dla-mieszka%C5%84ca/transport-w-mie%C5%9Bcie/strefa-tempo-30

Sugue, M. (2021, November 22). *Uneasy rider: How Brussels could kill off the motorbike*. POLITICO. https://www.politico.eu/article/motorcycles-european-comission-eu-germany-uk-zero-emission-engine/

Sustainability and Practicability of Electric Buses – Best Practice From Hamburg. (2020). Bsr Electric. https://www.bsr-electric.eu/news/sustainability-and-practicability-of-electric-buses-best-practice-from-hamburg

Sustainable Bus. (2020a, May 19). *Electric bus, main fleets and projects around the world*. Sustainable Bus. https://www.sustainable-bus.com/electric-bus/electric-bus-public-transport-main-fleets-projects-around-world/

Sustainable Bus. (2020b, October 22). *230,000 more e-buses in operation globally by 2025. An outlook on the future from BNEF*. Sustainable Bus. https://www.sustainable-bus.com/news/interview-aleksandra-o-donovan-bnef-electric-bus-market/

Sustainable Bus. (2020c, December 5). *Trolleybus. A growing demand thanks to zero emission operations*. Sustainable Bus. https://www.sustainable-bus.com/trolleybus-tramway/trolleybus-market-zero-emissions/

Sustainable Bus. (2021, October 13). *A third of European public transport buses to be zero emission by 2030, with over 10,000 ZE registrations yearly beyond 2025*. Sustainable Bus. https://www.sustainable-bus.com/news/electric-bus-market-ing-europe-forecast/

Taal, W. (2021, September 14). *FEMA's international survey on motorcycle emissions*. https://www.femamotorcycling.eu/wp-content/uploads/documents_library/web_results_emissions_survey_fema2021.pdf

Timperley, J. (n.d.). When It Comes to Buses, Will Hydrogen or Electric Win? *Wired*. Retrieved April 13, 2022, from https://www.wired.com/story/future-buses-hydrogen-electric/

Topham, G. (2022, March 4). Ulez 'to cover all of Greater London by end of next year.' *The Guardian*. https://www.theguardian.com/uk-news/2022/mar/04/ulez-to-cover-all-of-greater-london-by-end-of-next-year-sadiq-khan

Transport & Environment. (2021). *Break-up with Combustion Engines*. Transport & Environment. https://www.transportenvironment.org/wp-content/uploads/2021/08/2021_05_Briefing_BNEF_phase_out.pdf

Transport Canada. (2012). *High Occupancy Vehicle Lanes in Canada* (No. 54; Case Studies in Sustainable Transportation). Transport Canada. https://web.archive.org/web/20120419031447/http://www.tc.gc.ca/eng/programs/environment-utsp-hovlanescanada-886.htm

Transport for London. (n.d.). *Cash free buses*. Transport for London. Retrieved March 30, 2022, from https://www.tfl.gov.uk/modes/buses/cash-free-buses

Ueckerdt, F., Bauer, C., Dirnaichner, A., Everall, J., Sacchi, R., & Luderer, G. (2021). Potential and risks of hydrogen-based e-fuels in climate change mitigation. *Nature Climate Change*, *11*(5), Article 5. https://doi.org/10.1038/s41558-021-01032-7

UTM Editorial. (2021, May 2). Berlin: German e-bus capital. *Urban Transport Magazine*. https://www.urban-transport-magazine.com/en/berlin-german-e-bus-capital/

van Renssen, S. (2020). The hydrogen solution? *Nature Climate Change*, *10*(9), Article 9. https://doi.org/10.1038/s41558-020-0891-0

van Vliet, O., Brouwer, A. S., Kuramochi, T., van den Broek, M., & Faaij, A. (2011). Energy use, cost and CO2 emissions of electric cars. *Journal of Power Sources*, *196*(4), 2298–2310. https://doi.org/10.1016/j.jpowsour.2010.09.119

Wappelhorst, S. (2020, September 28). Germany's vehicle tax system: Small steps towards future-proof incentives for low-emission vehicles. *International Council on Clean Transportation*.

https://theicct.org/germanys-vehicle-tax-system-small-steps-towards-future-proof-incentives-for-low-emission-vehicles/

What is Electric Vehicle Fleet Management? (2021, February 23). Driivz. https://driivz.com/glossary/ev-fleet-management/

Wheelen, D. (2021, May 25). *These European Cities Already Have Driving Bans On Motorcycles*. RideApart.Com. https://www.rideapart.com/news/509587/european-cities-driving-motorcycle-bans/

Wiewióra, P. (2022). *Włocławek odpuszcza komunikację wodorową. Za drogo i za dużo niewiadomych*. Portal Samorzadowy. https://www.portalsamorzadowy.pl/gospodarka-komunalna/wloclawek-odpuszcza-komunikacje-wodorowa-za-drogo-i-za-duzo-niewiadomych,346374.html

Wiseman, Y. (2019). High Occupancy Vehicle Lanes are an Expected Failure. *International Journal of Control and Automation*, *12*(11), 21–32. https://doi.org/10.33832/ijca.2019.12.11.03

Wprowadzenie strefy tempo 30 w Katowicach przynosi efekty. Na drogach jest coraz bezpieczniej. (2019, October 14). KATOobywatel. http://katoobywatel.katowice.eu/aktualnosci/wprowadzenie-strefy-tempo-30-w-katowicach-przynosi-efekty-na-drogach-jest-coraz-bezpieczniej/

Wright, M. (2021, April 12). Bus Electrification: A comparison of capital costs. *Urban Transport Magazine*. https://www.urban-transport-magazine.com/en/bus-electrification-a-comparison-of-capital-costs/

CLIMATE ANALYTICS