

# Free fare public transport (FFPT) and climate change

**Professor John Whitelegg**

**Liverpool John Moores University**

**Fellow in Transport and Climate Change, Foundation for Integrated Transport, London, UK**

**Center for Mobility Culture, Kassel, Germany**

**Transport Choices for Sustainable Communities, Los Angeles, USA**

28<sup>th</sup> May 2021

## **Abstract**

This article argues for the introduction of Free Fare Public Transport (FFPT) throughout the European Union. The discussion is based on a UK case study but the case for FFPT is made for all EU countries. The case for FFPT rests on the over-riding importance of the need to decarbonise land transport in all EU countries. It is essential that all countries achieve zero land transport carbon by 2030 if we are to deliver an effective response to the climate emergency. FFPT is a major “game changing” policy shift to deal with transport carbon. FFPT is affordable and financially efficient when compared with the costs of not dealing with climate change. It will be associated with a number of closely associated policies that give priority to public transport in all urban and rural regions and progressively reduce the funding for car-based mobility.

## **Introduction**

**“Greenhouse gas emissions from the EU’s transport increased in 2018 and 2019 and have not followed the EU’s general decreasing emissions trend. National projections compiled by the EEA suggest that transport emissions in 2030 will remain above 1990 levels, even with measures currently planned in Member States. Further action is needed particularly in road transport, the highest contributor to transport emissions, as well as aviation and shipping, where transport demand is driving emissions upward in both absolute and relative terms”**

**“There has been a steady overall reduction in greenhouse gas (GHG) emissions in the EU in recent years. However, the transport sector has not followed this general trend and, as a result, its relative contribution to overall GHG emissions in Europe has become more significant. Therefore, although action is needed in all sectors if the EU is to meet emission reduction targets, this is particularly important in the transport sector.”**

**“Projections based on existing policy measures in EU Member States (‘with existing measures’ scenario) indicate that transport emissions will increase by 32 % by 2030 compared with 1990 levels.”**

## <https://www.eea.europa.eu/data-and-maps/indicators/transport-emissions-of-greenhouse-gases-7/assessment>

Initiatives and interventions to reduce transport emissions have been well-founded but have largely failed. It is time to shift the debate and discussion into a much more serious high impact, transformational dimension and this is the role of free fare public transport (FFPT)

The failure of transport policy initiatives to decarbonise transport is an international and a European failure but is especially serious in the UK. UK policy claims to support modal shift towards walking, cycling and public transport but budgets and spending commitments are dominated by cuts in bus funding, a decline in bus services, very large budget allocations for new road building and poor quality walking and cycling infrastructure. It is now clear that a much bolder and high impact approach is needed to reduce transport carbon. It is essential that the UK adopts policies and specific interventions that reduce surface transport carbon as near to zero as possible by 2030.

Total emissions (UK) from surface transport in 2019 were 113 MtCO<sub>2e</sub>, comprising 22% of total UK GHG emissions. These are primarily tailpipe emissions from fossil-fuelled road vehicles, with cars (68 MtCO<sub>2e</sub>), vans (20 MtCO<sub>2e</sub>) and heavy-goods vehicles (HGVs) (19 MtCO<sub>2e</sub>) the largest contributing types emissions (Committee on Climate Change, 2020)

Surface transport carbon is often a much larger percentage e.g. 37% in Shropshire (South Shropshire Climate Action, 2021)

We have had far too many years of central and local government rhetoric around the importance of active travel (walking and cycling) and the potential for bus trips to replace car trips. The rhetoric has not been translated into reality and national policy still prioritises road building. The £27 billion national roads building programme and the £7 billion “local large major” (LLM) road building programme are supported by the majority of councillors and MPs. There is very little support for transferring the £34 billion spend to European best practice standards of integrated public transport (e.g. Vienna and Zurich) and best practice cycling e.g. Copenhagen and Lund (Sweden)

It is now clear that success in meeting net zero carbon transport targets by 2030 (2050 is far too late) requires a dramatic transformation of spending and project implementation to produce a decarbonised land transport outcome. It is also clear that overall success on net zero targets (including energy, buildings, new homes, farming, land use and agriculture) depends on transport decarbonisation. If we fail on transport we are very unlikely to succeed with overall carbon reduction across all sectors of the economy and production and consumption.

We can succeed with transport but this will require a radical transformation of the way we do things. This is the key principle that has informed the energy transformation in Germany (Whitelegg, 2015). The energy transformation requires the rejection of all coal, oil, gas and nuclear generation capacity and its replacement by zero carbon, non-nuclear, renewables. This is now underway in Germany. The same principle applies to transport transformation. We will not succeed unless we abandon the principle that the car is the default option. The vast majority of car trips can be replaced by alternatives to the car and this will require bold and dramatic action including cancelling new road building, promoting car-free cities and full free fare public transport.

This short article identifies one example of bold and dramatic action: full free fare public transport. The case for cancelling all road building schemes has already been made (Whitelegg, 2021).

## **Background to FFPT**

FFPT is not a new idea. It has been thoroughly reviewed by Goodwin (1972) and more recently by Kębłowski W. (2020) and Britton (2020). It has also been recommended by the highly regarded sustainable transport consultancy “Transport for Quality of Life” (Sloman, et al, 2018; Sloman and Hopkinson, 2019). A recent Swedish study reported that FFPT has produced an increase in bus use but also creates a “high risk” that the majority of the increased travel by public transport comes from walking and cycling” (Hulten, 2020)

In September 2018 Dunkirk in France (population 200,000) introduced free public transport on 18 bus routes:

“The policy has “revitalised” the former industrial port and helped reduce carbon emissions. Researchers found that after the move, which was funded by a small increase in business tax, passengers increased by 60% during the week and doubled on weekends – with nearly 50,000 trips made per day. Of the new users, 48% said they regularly used the public transport network instead of cars.”

<https://www.bbc.com/worklife/article/20210519-how-france-is-testing-free-public-transport>

Los Angeles has taken steps to adopt FFPT

Later this month (May 2021), the Metro board will vote on a two-phase pilot program that would waive bus and rail fares for students in K-12 schools and community colleges starting in August. Low-income riders making less than \$35,000 a year—who comprise 70 percent of Metro’s customer base—would be phased in next January. The proposal, which is endorsed by L.A. mayor and board chair Eric Garcetti, would last through June of 2023. If the experiment is successful, the agency could decide whether to expand free transit access to all Angelenos regardless of income. According to a recent survey, 86 percent of Metro riders and 80 percent of non-Metro riders said they support going fareless.

“We have a moral obligation to research and implement a fareless transit system,” Phillip Washington, Metro’s CEO, told the *Prospect*. “In the long term, transit should just be like library services or fire department services.”

<https://prospect.org/infrastructure/transportation/los-angeles-turns-toward-free-fares/>

Cats et al (2017) review the impact of FFPT in Tallinn (Estonia) and conclude that one year after introduction public transport use has increased by 14%. Interestingly the authors quote a large scale European survey reporting that 59% of respondents support lower fares and only 9% support road pricing.

The detailed evaluation of FFPT in Tallinn (Cats et al, 2017) reported a modal shift from walking and cycling to public transport but the objective of transferring car trips to public transport was achieved:

“The study provides evidence that the modal shift objective from car to public transport has been achieved. Almost a year after the introduction of FFPT, public transport usage increased by 14%”

What is new is the realisation that we are not doing enough to decarbonise transport. There is now an urgent need to adopt much stronger interventions like FFPT to take the whole transport decarbonisation discussion to a “not seen before” new level. This new level will be characterised by strong messages around modal shift and even stronger psychological triggers that this shift will be financially rewarding for those taking up the new opportunities.

The failure to grasp the potential of public transport and modal shift from car to bus and rail is a dramatic failure to make full use of highly integrated, high quality bus services in transport decarbonisation. This has to change and change well before 2030. The change will require a dramatic transformation of bus service provision cross the UK and a key part of the transformation is “Free Fare Public Transport” (FFPT). If we are really serious about climate change and the urgent need to deliver the Paris agreement we need to plan for the organisation, funding and delivery of FFPT

FFPT already exists in 96 locations

The evolution of full FFPT cases worldwide (1970-2017)<sup>3</sup>

YEAR	FULL FFPT CASES					
	Total	Europe	North America	South America	Australia	Asia
1970	1	-	1	-	-	-
1980	6	2	4	-	-	-
1990	12	4	8	-	-	-
2000	25	7	16	2	-	-
2010	56	27	24	5	-	1
2017	96	56	26	11	1	2

Source: Kębłowski W. (2020)

FFPT will deliver a much-needed boost to modal transfer from car to bus, a fairer transport system that rewards those without cars, those on low incomes and those too young to drive. It widens accessibility and reduces social exclusion especially in rural areas and it decarbonises transport.

FFPT delivers a strong psychological boost to sustainable transport and decarbonisation. Giving something positive and valuable to those making travel choices is a much better strategy than interventions that take something away.

FFPT would not be a stand-alone policy. There is no point in having a free fare system grafted on to a poor quality and inadequate bus service provision. The introduction of FFPT would coincide with the adoption of much improved bus services along the lines suggested by CPRE (CPRE, 2021) in its report on “every village every hour”. It would also be monitored, supervised and managed by regional transport authorities along the same lines as the “Verkehrsverbund” in Germany (Buehler, Pucher & Oliver Dümmler, 2019)

## Discussion

The main issues to be discussed around FFPT are (1) will it transfer car trips to public transport and as a result reduce transport carbon? (2) Will it transfer walking and cycling trips to public transport? (3) What will it cost and how does that compare with current levels of financial support that are additional to fare box revenue?

These 3 issues will be discussed in the next section followed by a recommendation that the issues should be explored in much more detail in a demonstration project.

### **1 Will it transfer car trips to public transport and as a result reduce transport carbon**

The research article by Cats et al 2017 is clear on this point. FFPT will transfer car trips to public transport

This study examines travel pattern changes based on individual travel habit survey shortly before and almost 1 year after the introduction of FFPT policy in Tallinn based on interviews and travel diaries of a random sample of 1500 household. We analyse modal shift effects and whether they are driven by trip generation or trip substitution, travel attitudes and satisfactions as well as impacts on equity, employment prospects, and trip destination choices. Almost a year after the introduction of FFPT, public transport usage increased by 14 % and there is evidence that the mobility of low-income residents has improved. The effect of FFPT on ridership is substantially lower than those reported in previous studies due to the good level of service provision, high public transport usage and low public transport fees that existed already prior to the FFPT.

The small city of Templin (c.a. 15,000 inhabitants), Germany introduced a FFPT policy on 1997 (Storchmann [2003](#)). Since then the local public transport system is universally free. The ridership increased by 1200 %

within 3 years with the vast majority of this increase reported to be among children and youth

Similarly, Chapel Hill (a population of c.a. 60,000) implemented in 2002 after conducting an analysis that showed that revenues from fares (full paying passengers) were relatively low—around 8 % of the operating costs. After the implementation of FFPT, the ridership increased by 43 % during 9 months period. This was introduced simultaneously with an increase in service supply (Volinski [2012](#)).

On the basis of published work it is reasonable to assume that a transfer from car to bus can be expected to result from FFPT. The degree of shift in the UK context will depend on the degree to which bus services after many years of budget cuts and decline, offer an attractive alternative to the car. In areas where buses no longer offer an attractive alternative the potential for transfer will be limited. It is essential that the introduction of FFPT is co-ordinated with a programme of bus service improvements (DfT, 2021)

## **2 Will it transfer walking and cycling trips to public transport?**

Cats et al (2017) discuss the case of Hasselt, Belgium

“The vast majority of the substitution effects were due to shift from soft modes-30-40% from biking and 35-50% from walking. Only 10-20% of the substitution effects were associated with previous car trips”

The authors of this study do not describe the conditions that apply to everyday walking and cycling trips in Hasselt before the introduction of FFPT. It is likely that walking and cycling trips will transfer to FFPT in areas where road traffic danger, noise and pollution make those choices unpalatable. It is essential that FFPT take place at the same time as a serious upgrade in so-called “active travel”. The upgrade should include:

- General, default , wide-area 20mph speed limits to reduce road traffic danger and encourage active travel
- The provision of high quality, segregated, cycle routes to routine destinations e.g. schools and colleges.
- Car-free streets and car-free towns to create supportive environments for walking and cycling
- Mini-Holland traffic plans



<https://www.london.gov.uk/what-we-do/transport/cycling-and-walking/transforming-cycling-outer-boroughs-mini-hollands-programme>

The impact of FFPT can only be fully understood if it is monitored in a robust evaluation exercise with control areas e.g. in areas with poor quality walking and cycling infrastructure and at the same time in areas with high quality provision (20mph and mini-Holland). This has not been done

**(3) What will it cost and how does that compare with current levels of financial support that are additional to fare box revenue?**

It is normal for politicians and governments to quote cost as a reason for rejecting well-founded initiatives. Work is currently underway to calculate the costs of total FFPT in England. When this cost is known it must be compared with other costs that are known and with the benefits associated with the reduction of climate damaging carbon emissions. There will also have to be a comparison between the costs of introducing FFPT and the costs of not doing it. In this wide-ranging costing exercise there are some “knowns” e.g.

Annual revenue funding for buses in England (outside London) is £512 million (excluding free public transport for older and disabled people)

The cost of free travel for older and disabled people is £650 million

The total subsidy (£512 million plus £650 million), outside London, is £1.16 billion

National Audit Office (2020)

The costs associated with a largely privatised, profit-based bus system:

“In addition there are very large avoidable costs associated with a privatised bus service system (UK) which returned £297 million in profits to shareholders in one full year. This means that over a 10 year period there was a leakage of funds that could be used to improve buses or support FFPT if £2.8 billion (Taylor and Sloman, 2016)”

Taylor and Sloman (2016) summarise the spending of public money on buses as “Cost-effective use of public money”

Public money accounts for over 40% of bus operator revenues, through funding for socially necessary services (paid for by local authorities), payments to bus operators to carry concessionary pass-holders, and Bus Service Operators Grant (BSOG). Local authorities and national government also make substantial contributions through their funding for infrastructure, such as bus lanes, bus priority at junctions, real time passenger information, bus shelters and interchanges, and through bus schemes funded via national competitive grants programmes (e.g. Local Sustainable Transport Fund, Better Bus Areas Fund and Green Bus Fund).

## Conclusion

The Stern Review on the economics of climate change was very clear that the costs of not taking action were considerably greater than the costs of taking action

Using the results from formal economic models, the Review estimates that if we don't act, the overall costs and risks of climate change will be equivalent to losing at least 5% of global GDP each year, now and forever. If a wider range of risks and impacts is taken into account, the estimates of damage could rise to 20% of GDP or more.

In contrast, the costs of action – reducing greenhouse gas emissions to avoid the worst impacts of climate change – can be limited to around 1% of global GDP each year.

Stern (2006)

The discussion of FFPT is an example of the need to consider the costs of not doing something with the costs of doing it. Establishing a full free fare public transport offer as a key part of rapid transport decarbonisation is essential and far more important than anything else currently on offer to deal with the stubbornness of transport policy and transport choices when this sector of the economy is asked to play a full part on reducing carbon emissions.

FFPT will deliver huge social and economic benefits to over 500 million Europeans and is a major transformation that will deliver better of quality of life, public health gains, social justice and fairness. Why would we not want to do it?

There is no time to lose. There is nothing at all to lose and everything to gain. We must introduce FFPT in all European countries now.

## References

Britton, E (2020) Free Mobility

<https://worldstreets.wordpress.com/tag/freemobility/>

Buehler, R, Pucher, J and Oliver Dümmler (2019) Verkehrsverbund: The evolution and spread of fully integrated regional public transport in Germany, Austria, and Switzerland, *International Journal of Sustainable Transportation*, 13:1, 36-50, DOI: [10.1080/15568318.2018.1431821](https://doi.org/10.1080/15568318.2018.1431821)

Cats, O., Susilo, Y.O. & Reimal, T. (2017) The prospects of fare-free public transport: evidence from Tallinn. *Transportation* **44**, 1083–1104

<https://doi.org/10.1007/s11116-016-9695-5>

<https://link.springer.com/article/10.1007/s11116-016-9695-5>

Committee on Climate Change (2020) The 6<sup>th</sup> carbon budget. Surface transport.

<https://www.theccc.org.uk/wp-content/uploads/2020/12/Sector-summary-Surface-transport.pdf>

CPRE (2021) Every village, every hour 2021 buses report: executive summary

<https://www.cpre.org.uk/resources/every-village-every-hour-buses-report-exec-summary/>

DfT (2021) Bus Back Better

[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/980227/DfT-Bus-Back-Better-national-bus-strategy-for-England.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/980227/DfT-Bus-Back-Better-national-bus-strategy-for-England.pdf)

Goodwin, P (1973) Some data on the effects of free public transport, *Transportation Planning and Technology*, 1:3, 159-174, DOI: [10.1080/03081067308717043](https://doi.org/10.1080/03081067308717043)

<https://www.tandfonline.com/doi/abs/10.1080/03081067308717043?journalCode=gtpt20>

Hulten, J (2020) Avgiftsfri kollektivtrafik för alla, K2, the Swedish Public Transport Knowledge Center, Lund, Sweden

<https://www.k2centrum.se/avgiftsfri-kollektivtrafik-alla-0>

Kębłowski W. (2020) Why (not) abolish fares? Exploring the global geography of fare-free public transport. *Transportation* **47**, 2807–2835 (2020).

<https://link.springer.com/article/10.1007/s11116-019-09986-6>

National Audit Office (2020) Improving local bus services in England outside London

<https://www.nao.org.uk/wp-content/uploads/2020/10/Improving-local-bus-services-in-England-outside-London.pdf>

Sloman, L et al (2018) We need fare-free buses! It's time to raise our sights

<http://www.transportforqualityoflife.com/u/files/180317%20Fare-free%20buses%20time%20to%20raise%20our%20sights.pdf>

Sloman, L and L Hopkinson (2019) Transforming public transport. Regulation, spending and free buses for the under 30s

<https://www.transportforqualityoflife.com/u/files/2%20Transforming%20public%20transport%20briefing.pdf>

South Shropshire Climate Action (2021) Climate Action Plan for the Ludlow Constituency to reach Net Zero by 2030

[www.southshropshireclimateaction.org](http://www.southshropshireclimateaction.org)

Stern, N (2006) The economics of climate change

[http://mudancasclimaticas.cptec.inpe.br/~rmclima/pdfs/destaques/sternreview\\_report\\_complete.pdf](http://mudancasclimaticas.cptec.inpe.br/~rmclima/pdfs/destaques/sternreview_report_complete.pdf)

Storchmann, K.: Externalities by automobiles and fare-free transit in Germany—A paradigm shift? J. Publ. Transp. 6(4), 89–103 (2003)

Vivier, J (2006) Mobility in Cities Database. Better mobility for people worldwide. Analysis and Recommendations, UITP (Union Internationale Transports Publique), Brussels.

Taylor, I and Sloman, L (2016) Building a world class bus system for Britain, Transport for Quality of Life

[http://www.transportforqualityoflife.com/u/files/160314\\_Building\\_a\\_World-class\\_Bus\\_System\\_extended%20summary%20report\\_FINAL4\\_for\\_web.pdf](http://www.transportforqualityoflife.com/u/files/160314_Building_a_World-class_Bus_System_extended%20summary%20report_FINAL4_for_web.pdf)

Volinski J. Implementation and outcomes of fare-free transit systems. Transit Cooperative Research Program. TCRP Synthesis 101 (2012)

Whitelegg, J (2015) Mobility: A New Urban Design and Transport Planning Philosophy for a Sustainable Future, Straw Barnes Press. ISBN 13: 978-1530227877

Whitelegg, J (2021) When in a hole stop digging. All local road schemes promoted by local authorities must be cancelled, Foundation for Integrated Transport, London

<https://integratedtransport.co.uk/when-in-a-hole-stop-digging-all-local-road-schemes-promoted-by-local-authorities-must-be-cancelled>