

Congestion Charging: A tool to tackle congestion in UK cities?

Lena Tochtermann, October 2008

Summary

Congestion charging – like other forms of road pricing – remains a political minefield. As the consultation on the Western Extension of London’s congestion charging scheme comes to an end – and as Greater Manchester heads towards a referendum on its own scheme – it is time to revisit the big economic questions behind congestion charging.

This note sets out the economic benefits and costs around congestion charging - and shows that these are finely balanced, and will vary from city to city. It revisits the question of whether congestion charging schemes are fair, highlighting groups less likely to benefit from a scheme than others, such as small and medium sized enterprises and people living in areas with low access to public transport. The note also argues that congestion charging is primarily an economic instrument rather than an environmental one.

Congestion charging – like other forms of road pricing – remains a political minefield.

Over the last two years, ministers have backed away from their previous enthusiasm for a national road pricing scheme. In early 2007, an electronic petition against road pricing gained nearly two million signatures on the 10 Downing Street website – leading transport secretaries Douglas Alexander and Ruth Kelly, to downplay the prospect of a UK-wide charging scheme. While ministers have quietly continued to fund technology trials, in-car black boxes and “eye-in-the-sky” tracking remain a remote possibility during the next decade.

Ministers have since re-focused their attention on promoting urban congestion charging schemes – arguing that local schemes, like London’s, could significantly reduce the negative economic and environmental impacts of congestion. Having already introduced a financial “sweetener”, the Congestion Transport Innovation Fund (C-TIF), in early 2006, the Department for Transport (DfT) has spent the past two years encouraging city-regions to adopt charging schemes in return for massive public transport investment.

This process has sparked intense political debate in cities and towns across England. In some of the areas awarded “pump-priming” funding to study congestion charging schemes, local political leaders have downplayed the prospects due to strong opposition from residents and businesses. Many see CTIF as a thinly-disguised bribe – and worry that congestion charging could harm fragile local economies, especially during the current downturn. Under mounting political and economic pressure, some C-TIF bidders have stepped back from congestion charging, at least in the short term.

Cambridge, which was a front-runner in the race for C-TIF, has decided to rework its plans – leaving Greater Manchester as the only urban area to make a formal TIF bid. The congestion charge has now become the top political issue in Greater Manchester – with council and business leaders lining up on both sides of the debate. Roger Jones, the Salford councillor who headed up the local transport authority and the congestion charging bid, lost his seat in the May 2008 local elections. Greater Manchester's leaders have now taken a major political risk by calling a December referendum on the congestion charging scheme. While winnable, the December referendum's outcome is finely balanced, with polls suggesting a 50-50 split in the electorate.

In London, congestion charging became a key battleground in the May 2008 mayoral elections, with the eventual winner, Boris Johnson, attracting broad support for his pledge to re-focus the capital's existing scheme.

As a result of all this politicking, the big economic questions around congestion charging have faded into the background. Can charging help to support urban economic growth, by reducing the costs of congestion? Is it the most effective way of decreasing congestion, or could it hinder the resurgence of regional cities? And what does it mean for local residents and businesses? This note attempts to answer these questions by reviewing the economic evidence around urban congestion charging schemes.

Congestion in UK cities is growing

Congestion is growing within the UK's cities. A survey by DfT of English urban areas shows that since 1999/2000 average traffic speeds have been falling – both during peak and during off-peak hours.

- In Greater Manchester peak traffic speeds have fallen by 17.7% between 1999/00 and 2006; in Bristol they have fallen by 15.8% over the same time period¹, and in London the level of congestion² during 2007 was effectively as high as it was in 2002 – despite the introduction of congestion charging³.
- Data from the Scottish Government shows that the situation in Edinburgh and Glasgow is similar – with traffic on trunk as well as local authority roads growing steadily since 1996⁴.
- In Northern Ireland, Belfast also suffers increasing traffic congestion⁵.

We all experience congestion on a daily basis: if you live in Rusholme in the South of Manchester, you probably prefer to walk into the city centre rather than take the bus; if you pick up somebody from Bristol Temple Meads on a weekday evening coming from North-West Bristol, it might take you twice as long as on a Saturday or Sunday. But congestion is not only a personal nuisance – it also has serious economic impacts for cities. A 2003 study by Oxford Economic Forecasting and the City of London Corporation, for example, found that transport delays cost the City of London alone about £230 million per year – and this was a conservative estimate. A later study by Oxford Economic Forecasting found that congestion's 2005 cost to Central London was £1.2 billion per year⁶.

What are UK cities doing to tackle congestion?

There are several instruments UK cities can use to decrease the cost congestion imposes on their economies. Nottingham, for example, is planning to introduce a workplace parking levy; in London Boris Johnson is planning to rephase traffic lights; Bristol is considering a resident parking scheme, and Cambridge has introduced high car park prices within the city centre and Park and Ride facilities at its outskirts that provide parking free of charge.

1 DfT (2007) *Transport Statistics Bulletin. Road Statistics 2006: Traffic, Speeds and Congestion.*

2 Congestion is measured as the mean excess travel rate in minutes per kilometre.

3 TfL and the Mayor of London (2008) *Central London Congestion Charging. Impacts Monitoring. Sixth Annual Report.*

4 Scottish Government Statistics (2007) *Scottish Transport Statistics No. 26.* Available from: www.scotland.gov.uk/Resource/Doc/933/0054831.xls

5 Department for Regional Development, Northern Ireland (2004) *Belfast Metropolitan Transport Plan 2015*

6 See: Oxford Economic Forecasting and the City of London Corporation (2003) *The Economic Effects of Transport Delays on the City of London.* And Oxford Economic Forecasting (2005) *Time is Money. The Economic Effects of Transport Delays in Central London*

Some of these instruments represent “carrots” trying to encourage modal shift or measures trying to maximise a network’s limited capacity. Congestion charging, by contrast, is a “stick” – imposing a charge for entering a specially designated zone or crossing a cordon.

At the moment London is the only UK city with a sizeable congestion charging scheme in place. As previously discussed, Cambridge and Birmingham have both delayed initial C-TIF bids and Greater Manchester’s peak-time charging scheme - despite having been granted programme entry by DfT – now faces a December referendum.

London

London introduced congestion charging in February 2003 and extended it westwards in February 2007. London’s scheme is area based and applies from 7a.m. to 6 p.m. on weekdays. When the London scheme was introduced in 2003 by then Mayor Ken Livingstone, it was an economic instrument aimed at decreasing congestion. By 2009 Ken Livingstone’s stated aim was to transform the charge into a mixed economic and environmental tool through the introduction of a £25 charge for cars emitting a high level of CO₂.

Boris Johnson, London’s newly elected mayor, has since scrapped this higher charge – arguing that it is discriminatory and that it will not have a positive economic impact. He is also holding a five-week consultation on the Western extension of the zone that started on September 1st and will end this Sunday; and he intends to investigate the introduction of variable charging similar to that employed in Stockholm or Singapore. This is likely to be followed by a more wholesale review of the scheme, which Simon Milton, London’s Deputy Mayor, suggested at the Conservatives’ party conference in Birmingham.

Greater Manchester

Greater Manchester could be the second major UK city to introduce congestion charging, with a scheme that would be more sophisticated than London’s (see details in box below). In June DfT informed the Association of Greater Manchester Authorities (AGMA) that their C-TIF bid was granted programme entry. This decision meant that Greater Manchester could go ahead with plans for a scheme worth £2.77 billion, comprising £1.44 billion in C-TIF grants, £1.15 billion in prudential borrowing against charging revenues and £109 million in local contributions. A large chunk of the funding package would be invested in public transport, which would be in place by the time the charging scheme was up and running.

Yet the scheme faces severe hurdles. Currently three out of ten councils on AGMA oppose the scheme: Trafford (Con), Bury (Con) and Stockport (Lib Dem). Although only seven out of ten need to agree in order for a scheme to be implemented, at the end of July AGMA decided to hold a referendum on the charge across the whole of Greater Manchester, which will take place in December following public consultation. A charge will only be introduced if a majority in seven out of the ten boroughs votes in favour of charging.

Details of the Proposed Greater Manchester Congestion Charge

- Congestion has been growing in Greater Manchester – and car ownership has increased by 25% over the last 10 years (see: www.gmfuturetransport.co.uk).
- If congestion is not tackled, one in seven potential new jobs created in Greater Manchester over the next 15 years will be at risk (Centre for Economic and Business Research).
- The planned scheme is worth around £2.8 billion overall, comprising more than £1.4 billion in C-TIF grants, almost £1.2 billion in prudential borrowing against charging revenues and around £100 million in local contributions.
- This would be a cordon-based scheme with an inner and an outer ring. Charges only apply when crossing these rings during peak times - inbound during morning peak hours (£1) and outbound during evening peak hours (£2)(7.00-9.30 a.m. and 4.00-6.30 p.m.).

- The charge would only come into place after 80% of transport improvements have been put into place – that is 2013 at the earliest.
- Low income workers can apply for a 20% discount on the charge.
- This C-TIF bid is estimated to generate approximately 5,800 jobs per year between 2009/10-2012/13 and 3,900 jobs per year between 2013/14-2018/19 (construction, maintenance, indirect job generation) (Arup 2008).
- C-TIF investment is predicted to lead to an annual improvement in GVA potential of over £1 billion by 2020 (estimated at current prices) (KPMG 2008)
- In July 2008 a three-month public consultation on the C-TIF bid started. At the end of July AGMA decided to extend Bolton's referendum to the whole of Greater Manchester.
- Three pressure groups are trying to influence the outcome of Greater Manchester's consultation and referendum: Manchester Against Road Tolls and the Greater Manchester Momentum Group, both oppose the charge. United City supports it. The Greater Manchester Chamber of Commerce is impartial on the charge and committed to a fair debate.

Cambridge and Birmingham

Cambridge and Birmingham both prepared C-TIF bids, but have encountered difficulty in reaching local consensus. Birmingham withdrew its bid earlier this year; Cambridge is rethinking the feasibility of its scheme and has been given pump priming funding together with Leeds and Reading to further develop its charging plans.

In Birmingham congestion is expected to grow 22% by 2021 and supporters argue that not introducing congestion charging could result in 40,000 job losses and a cost of £205 million each year⁷. However, many businesses are worried a charge might damage the city's economic competitiveness, especially if other cities do not follow suit. Cambridge cites a lack of public support, especially in its rural areas, for delaying its bid – but 59% of people say they support charging if attractive public transport alternatives were available. Birmingham has looked to other ways of tackling congestion, and is now introducing Controlled Parking Zones consisting of a combination of measures such as resident parking schemes and Pay and Display parking. The city has also launched the “Quick Wins” programme, sending a questionnaire to businesses to identify locations on the highway network where small interventions could make a maximum impact. In Cambridge possible alternatives to C-TIF are a resident parking scheme and banning cars from entering the city centre.

Can congestion charging help cut congestion - and thereby boost city economies?

Can congestion charging help cut congestion or will it harm businesses' competitiveness and reduce residents' net disposable income? At a time when the economic outlook is uncertain, fuel prices are high and charging schemes are being shelved in many cities, it is time to re-examine, whether congestion charging really does the job – and whether it represents value for money.

Congestion charging schemes are costly to implement and maintain and they represent an additional cost for local businesses and residents – a direct monetary cost (the charge) as well as indirect costs (e.g. convenience). Proponents of charging schemes use economic modelling to argue that they deliver substantial benefits to local labour markets over time. A scheme should only be implemented, if its benefits outweigh its costs. There are four ways that congestion charging could potentially help boost urban economies:

- time savings
- wider economic benefits
- the creation of an investment dividend
- the promotion of behaviour change.

⁷ Paul Dudley (2008) *Road pricing plan stalls*. In: *Planning 10*, 14 March 2008.

1: Can Congestion Charging create real time savings?

Congestion charging is claimed to reduce traffic levels and smooth traffic flow leading to shorter and more predictable journey times. In London, for example, after an initial drop, 21% fewer vehicles⁸ entered the central zone in 2006 and 2007 than in 2002⁹. This in turn can reduce travel times: in London traffic speed increased by 25% between 2002 and 2003, the year the charging zone was introduced.

Time savings can deliver productivity benefits to a local economy. A study included in the evidence base of the Eddington Report estimated total user benefits¹⁰ accruing from time and money savings over a period of 60 years to be worth £183.9m in 2006 in London, £50.2m in Birmingham and £38.1m in Manchester. These represent only a portion of the overall economic benefits of the scheme, but how significant are they? This is difficult to say – there is little available evidence and the evidence for London is ambiguous. Congestion in central London dropped from an index value of 1.42 in 2002 to 0.98 in 2003. But it has increased steadily since and in 2007 reached pre-charging levels. The number of vehicles entering the central charging zone has remained constant after a significant initial drop (-21%). Nevertheless, without charging it would be higher still.

TfL's analysis suggests another possible reason for the increase in congestion: the total duration of street works in the zone increased from an index value of 1.00 to an index value of 1.95 between 2004 and 2006¹¹. Another possible cause might be the sharp rise in the population of the boroughs that are part of the central charging zone since 2004¹² – a growing number that can apply for 90% residents' discounts. So a charging scheme could impact on traffic volumes and decrease congestion - and speed up traffic flows – when intervening factors such as population increases within the zone and road works are taken into account.

2: How far can Congestion Charging widen a city's economic reach?

Congestion charging schemes of any kind can widen a city's reach as long as they succeed in reducing traffic levels. It is faster to travel on de-clogged roads and improved public transport so a higher total number of people can reach the city within a given amount of time. This helps to increase a city's effective density - which boost city economies over and above the monetary effect of time savings, because:

- they give companies access to a bigger and more varied pool of labour
- individuals will find it easier to obtain employment
- firms can source from a bigger pool of suppliers, and
- more information can be exchanged, which is likely to lead to a higher rate of innovation.

Taken together, these factors result in an economic return for a city-region with more wealth generated by and flowing through the local economy. In Leeds, for example, these wider economic benefits from improved access to the city centre added a 25 percent premium to the benefits accruing to local transport users¹³. But such economic boosts from widening a city's economic reach will not apply equally to all urban areas – they are biggest in the UK's major cityregions, which already have a relatively high effective density. A study of wider economic benefits arising from the reduction of travel times in England's 20 largest cities confirms this – occurring over a period of 60 years London's

8 Vehicles stands for vehicles with four or more wheels here.

9 TfL and the Mayor of London (2007) *Central London Congestion Charging. Impacts monitoring. Fifth Annual Report. And TfL and the Mayor of London (2008)*, op cit.

10 Total user benefits consist of benefits accruing from time and money savings to businesses and individuals (commuting as well as other purposes).

11 See: TfL and the Mayor of London (2007), op cit. And TfL and the Mayor of London (2008), op cit.

12 The boroughs that were included in the analysis are: Southwark, Lambeth, City of Westminster and City of London. Source: Nomis

13 Adam Marshall & Chris Webber (2007) *The case for better transport investment: Agglomeration and growth in the Leeds City Region, Centre for Cities*

benefits were worth £56.9m in 2006, followed by Birmingham where benefits were worth £2.5m and Manchester with benefits worth £2.2m¹⁴. Agglomeration benefits occur with a delay and they only represent a small proportion of total user benefits. And they need to be weighed against the cost to businesses and residents of congestion charging (including the set up of a scheme), which may be higher than the sum of user and wider economic benefits in cities with low effective densities, like Stoke or Southampton.

3: How much revenue can charging generate for public transport investment?

Congestion charging schemes generate an investment dividend and represent an opportunity for cities to generate ring-fenced revenue for urban public transport. In addition, cities can obtain significant upfront investment (e.g. over £1.4 billion in C-TIF grants in Greater Manchester, with around a further £1.2 billion borrowed against future revenues). The London Congestion Charging Scheme (LCCS), had a net revenue of £137 million in 2007/08 – more than 17% of London's annual bus subsidy of around £625m¹⁵. Although only a proportion of a major city's overall transport spend, reinvesting this revenue in public transport alternatives could be targeted to help link people at all levels of the labour market to jobs and economic opportunity. This has been done in London, where Transport 2000 (now Campaign for Better Transport) counted 29,000 additional bus passengers on 560 extra bus services in the morning peak period in 2006 compared to 2002¹⁶.

4: How far can Congestion Charging encourage behaviour change?

Congestion charging is supposed to incentivise smarter transport and land-use choices. It can encourage behaviour change, as fewer people will use cars and more will use less expensive travel modes, which are often more sustainable. London is the one of only few world cities so far which has experienced such a modal shift and this may in part be due to the congestion charge. In London, the composition of traffic entering the central charging zone has changed significantly between 2002 and 2007. The amount of pedal cycles has increased by 66%, the amount of buses and coaches increased by 31% and the amount of cars and minicabs reduced by 36%¹⁷. Such a decrease in the use of cars is likely to encourage more tightly-built cities over time – where more amenities are located within walking distance. The corresponding increase in demand for sustainable travel modes is likely to lead to an increase in the provision of public transport, pedestrian and cycling infrastructure. This has been cited as an important factor in the location decisions of companies as well as the highly skilled – which are important because they have the potential to boost city economies¹⁸.

The four effects above mean that congestion charging could, in theory, support urban economies. However, much depends on the design of the scheme and the city itself. Four issues are particularly important:

- UK evidence is not yet clear-cut that congestion charging schemes have the ability to speed up traffic in the long run, but evidence from Singapore is more positive¹⁹.
- Wider economic benefits from time savings are comparatively small, and accrue over a long time period, rather than upfront.
- Congestion charging is not a silver bullet for cities seeking to increase transport investment, but it does provide some extra funding.
- The London scheme seems to have made an impact on behaviour – however the scheme was primarily designed to decrease congestion and encourage more efficient use of roads (e.g. through bus prioritisation).

14 Sir Rod Eddington and DfT (2006), *op cit*.

15 This excludes Bus Services Operators Grant and Concessionary Fares.

16 See: http://www.bbc.co.uk/london/content/articles/2006/11/21/congestion_update_feature.shtml

17 TfL and the Mayor for London (2008), *op cit*. This decrease is higher than the decrease in vehicles with 4 or more wheels as it also includes vans, lorries and buses.

18 OECD (2006) *OECD Territorial Reviews: Competitive cities in the global economy*

19 Georgina Santos (2005) *Urban Congestion Charging: A Comparison between London and Singapore*, *Transport Review* 25(5): 511-534.

Congestion charging also costs local businesses and residents money. London's scheme's revenue, that is its direct costs to users, was £268m in 2007/08. This needs to be weighted against estimated benefits of a scheme.

Is congestion charging fair?

In addition to the net economic impact of congestion charging, cities need to consider equity. Are charging schemes fair – or do they discriminate between different types of businesses, people and places?

Businesses

Congestion charging might affect businesses in different sectors and businesses of different sizes differently – some sectors are more dependent on transport than others and smaller businesses might be unable to afford the charge. Some sectors might find it easier to pass the charge on to their customers than others. Plumbers, for example, will find it much easier to pass on the charge than hairdressers.

Simple comparisons of pre and post charging conditions in different sectors, like those in TfL's Central London Congestion Charging Impacts Monitoring Reports, are crude. To establish the exact economic impact of congestion charging schemes, detailed economic modelling needs to account for a variety of other factors – like seasonal fluctuation, or income.

In the case of London this has been done in one study by GLA Economics. The study solely concentrates on central London retail sales and sales at the John Lewis store in Oxford Street in 2005²⁰. It concludes that congestion charging has had no significant impact on retail sales within central London overall – but that it has had a significant negative effect on sales at the John Lewis store in Oxford Street. Depending on the model used, a reduction in sales of 6.9-9.0% at the John Lewis store seems to go hand in hand with congestion charging. This effect might be overestimated as the model fails to take account of competition from other stores in Oxford Street – but it also should not be understated. While we cannot generalise from a study looking at one store, other central London businesses may also have been affected, with economic activity displaced to areas outside the zone.

The introduction of a charge may also impact small and medium-sized enterprises (SMEs) more than bigger enterprises – they tend to have tighter budget constraints. But SMEs might not only face disadvantages due to tighter financial budgets – they might also face them because they lack scale. Big supermarket chains, like Asda or Sainsburys, have the ability to pool deliveries from different suppliers or switch to night deliveries to avoid paying the charge. Local corner shops are more likely to get frequent deliveries from different sources – and are therefore likely to incur additional expenses when congestion charging is introduced.

However, businesses are also likely to benefit from the introduction of a charging scheme – more reliable and less delayed Just in Time deliveries and a facilitation of more frequent interactions. It is hard to quantify these.

People

Congestion charging on its own does not cause, strengthen or ameliorate social exclusion. Its impact on social exclusion depends on the design of the respective scheme. Focus group-based research on the possible effects of the introduction of a congestion charging scheme in Bristol points to a number of vulnerable groups.

20 Mohammed Quddus, Alon Carmel & Michael Bell (2005) *The congestion charge's impact on retail – The London experience*, Working Paper 12, GLA Economics

- People who could only just afford a car before a scheme is introduced may not be able to afford its maintenance after a scheme is introduced – they are prone to reduce journeys.
- This risk also exists for the elderly or the disabled, who often depend on lifts from family and friends, and might be afraid to ask them if the favour now costs £5 extra – or they simply cannot afford to take a taxi instead.
- Congestion charging is also likely to disadvantage those living in areas that are less accessible – where public transport provision and the provision of demand responsive transport (e.g. for medical appointments) is less than ideal.
- Certain kinds of professions might also be more prone to be negatively affected by a charging scheme – such as key workers and shift workers. A survey undertaken by Transport for London, on the social impacts of the Western extension of the Central London Congestion Charging Zone, tends to confirm this. Around three quarters of key workers with increased travel expenses found the extra cost difficult to meet²¹, while shift workers did not change their travel behaviour significantly. The House of Commons Transport Select Committee has now launched an inquiry into taxes and charges on road users, with the final report likely to be published in April 2009.

However, to counterbalance these effects, if congestion charging enables investment and better public transport, this can significantly improve the transport outlook for the most disadvantaged groups, who do not have access to a car.

This highlights the importance of an efficient public transport system covering all areas of a city to reduce the impact on some individuals – ideally in place before congestion charging is introduced. Such an integrated public transport system not only has equity benefits – it also has a potential economic dividend²². When implemented hand-in-hand with a charging scheme, where ring-fenced revenue then can be reinvested in public transport – it represents the “carrot” with which to complement the “stick”. Such a combined approach helps induce behaviour change - because it means that public transport is not just available, but that it is carefully phased and coordinated.

Transport integration - such as the integration of bus services with other modes of public transport, integrated ticketing and the servicing of low margin and loss-making routes that link people in deprived areas to jobs - can complement congestion charging. All of these were in place in Central London to some degree when Ken Livingstone introduced congestion charging in 2003. This made congestion charging much more acceptable to the public because cheap and attractive alternatives were available and could be expanded. Also, public transport use within London was already higher than anywhere else in the country – with 83% of people entering central London during morning peakhour by public transport in 2001²³. And London had an elected mayor, which facilitated the introduction of the scheme.

Places

The impact of congestion charging is also likely to vary in different areas. Districts around the fringes of congestion charging zones can be expected to experience displacement effects – more congestion, less parking for local residents, and maybe even a worsening of air quality. TfL’s Annual Impacts Monitoring Reports for the London Congestion Charging Zone do not explicitly look at such possible displacement effects. What the reports do however is look at congestion on the inner ring road, which forms the boundary of the original charging zone and is free of charge. Congestion on the inner ring road has decreased since the introduction of the charge.

²¹ TfL and the Mayor of London (2008), *op cit*.

²² Centre for Cities will be publishing a report later this year together with Prof. John Preston from Southampton University to look in more detail at the economic and social benefits of integration.

²³ TfL (2003) *Central London Congestion Charging. Impacts monitoring. First Annual Report*

Congestion charging might also have different effects on businesses within and without the zone. The above mentioned annual analysis by TfL compares sector performance within the Central London Charging Zone with that in the rest of inner London and outer London. Again, such comparisons are crude, as they do not take into account other factors that might have influenced spatially differentiated performance. But the interesting point to take from the analysis is that in sectors that are considered particularly sensitive to the introduction of charging – like retail – there is little evidence that shops located in the charging zone are performing worse than those located elsewhere.

Can congestion charging help the environment?

Congestion charging is primarily an economic instrument rather than an environmental one. However, it is often mistaken for the latter. Motorists generate economic costs by adding to traffic delays and carbon emissions, which negatively impact others and in turn impose costs on them. Congestion charging attempts to make motorists pay the price of the economic costs they create. Although these costs are not easy to quantify, charging supporters argue that pricing congestion internalises costs - thereby helping markets to work more efficiently, and improving the local economy.

Congestion charging's impact on the environment is a second-order question. In theory, charging could improve local air quality, especially within the charging zone. However, it is also possible that charging schemes could lead to a worsening of environmental standards in the areas surrounding a charge. So congestion charging should be carefully differentiated from purely environmental policy instruments, such as the Low Emission Zone that now affects all lorries and buses operating within the M25.

Probably the biggest argument for congestion charging from an environmental perspective is that it has the potential to induce behaviour change among city residents. If more people cycle, walk or take the bus to work, CO₂ emissions might decrease, and local air quality might improve. However, this should be seen as an 'extra benefit' - rather than the core purpose of the charge. Congestion charging also has the potential to reduce the emissions of the remaining traffic – as smoother traffic flows produce fewer emissions. This has been the case in London's central charging zone, where the traffic volume and speed change impacts of congestion charging have reduced emissions of oxides of nitrogen (NO_x) by 8%, emissions of particulate matter (PM₁₀) by 6% and emissions of carbon dioxide (CO₂) by 16% from 2002 to 2003²⁴.

Measuring the impact of congestion charging on general air quality is much more difficult. Take Greater Manchester, for example: a charge there would only apply between 7.00-9.30 and 16.00-18.30. It will be extremely difficult to measure the impact of such a temporally limited instrument, especially as air quality is influenced by a variety of other factors such as weather conditions, emissions from other sources, technological changes or chemical reactions in the atmosphere. Despite the positive impacts of the London scheme on emissions of oxides of nitrogen, particulate matter and carbon dioxide, it is not clear if congestion charging influences the overall level of emissions at all. Instead, displacement effects might lead to a worsening of conditions in the areas surrounding the zone, which could be the result of a spreading of emissions over time and space.

Ideally, an economically-focused congestion charge should be used alongside a wider package of environmental instruments. An example where this is done is London, where the congestion charge is accompanied by the Low Emission Zone (introduced in February 2008), a massive investment in public infrastructure and a number of innovative instruments – such as the provision of a cycling journey planner on TfL's website.

²⁴ TfL and the Mayor of London (2007), *op cit*.

How can UK cities become less congested and more productive?

This note has outlined the economic effects to consider in assessing the merits of a congestion charging scheme. Prescribing congestion charging to all UK cityregions would be like handing out antibiotics to everybody turning up at a doctor's surgery – it does not work for all, but for some it can make a real difference. Congestion charging is not for all UK city-regions and the evidence is not yet comprehensive either way. But in some cities, such as Greater Manchester, it could decrease congestion and support the economy, particularly if it leads to time savings.

The existing economic evidence suggests three lessons for cities considering charging schemes:

- **Evaluate local impacts:** Local leaders – both public and private sector – should continue to assess the likely benefits of congestion charging, weigh up the relative impacts of the likely effects, and consider whether their local transport system can accommodate the modal shift that is likely to happen after a charging scheme is introduced.
- **Engage and inform:** Wider public engagement with business and residents is also required. Scheme supporters need to be honest about the potential effects of a charging scheme – both positive and negative. While congestion charging may deliver an overall economic dividend, and may improve transport for some groups (e.g. commuters and the bus dependent), it may have negative impacts on others (e.g. low-income car users).
- **Lobby for transport powers:** For congestion charging schemes to deliver economic benefits, improved public transport networks are critical. Central government needs to give cities the powers they require to improve local public transport systems – including improved governance arrangements, more power over local buses, influence over commuter rail lines, and greater financial flexibility. Greater transport integration and congestion charging schemes must go hand-in-hand.



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