Implemeting a congestion charge

In a nutshell

SUMMARY
It is best practice to implement a congestion charge in city areas with high traffic congestion. The congestion charge is an economic disincentive (fee) to the use of congested roads at the busiest times of the day. In order to be successful, the congestion charge needs to be implemented as part of a package of transport measures that provide a valid alternative to the use of a car.
Target group
Public administrations responsible for mobility and/or public transport in their territory
Applicability
This best practice is applicable to local authorities in urban areas with high traffic congestion and air pollution.
Environmental performance indicators
• Modal share of journeys (% of journeys made by car, motorbike, public transport, cycling and walking) • Percentage of reduction in air pollutants (particulate matters - PM10, ammonia and nitrogen oxide) within the congestion charge area, compared to the situation before the introduction of the congestion charge (%) • Percentage of reduction in vehicular access of non-exempt vehicles to the congestion charge area compared to the situation before the introduction of the congestion charge (%) • Percentage of increased average speed and punctuality of public transport vehicles in the congestion charge area compared to the situation before the introduction of the congestion charge (%)
Benchmarks of excellence
• The concentration of air pollutants (PM10, ammonia and nitrogen oxide) is reduced by 10 % (on average) within the congestion charge area, compared to the situation before the introduction of the congestion charge • Vehicular access of non-exempt vehicles to the congestion charge area is reduced by 20 % compared to the situation before the introduction of the congestion charge • The speed and punctuality of public transport services are improved by 5 % compared to the situation before the introduction of the congestion charge

Description

Experiences from frontrunner cities such as London, Milan and Stockholm show that congestion charges can be an effective means for achieving multiple policy objectives. Benefits can include: reducing traffic volumes in a specified area; increasing the efficiency of the transport system as a whole; encouraging people to use public transport, walk and cycle; and raising finance for a city. From an environmental perspective, this translates to environmental benefits such as reductions in air and noise pollution, as well as opportunities to improve the quality and attractiveness of the city centre. When planning a congestion charging scheme it is important to be informed about the links between traffic congestion and environmental issues, as well as the different aims, achievements and lessons learnt from existing congestion charging schemes.

Traffic congestion is a problem experienced in many European cities and, in simple terms, can be described as the situation where the addition of a vehicle to the traffic flow on a road network increases the journey time for others (Thompson and Bull 2001 cited in Bull 2003 and Jarl 2009). Congestion leads to higher operational costs for road users, including both private vehicles and public bus operators. It also causes externalities that are more difficult to quantify in terms of wasted time and increased environmental pollution (Button 1993 cited by Jarl 2009). When motor vehicles are forced to stop and then accelerate again in heavy traffic, this results in greater emissions than when traffic moves at more consistent speeds (Barth & Boriboonsomsin 2008). Table 1 records congestion levels in ten of the most congested cities in Europe, as recorded in the TomTom European Traffic Index, which aims to provide policy makers with unique and unbiased information. The figures for delays per hour during peak periods illustrate powerfully the inefficiency of congested road networks.

Table 1: Congestion levels in European cities

City and country	Rank[1]	Congestion level	Delay per hour in peak period	Delay per year with a 30min commute
Palermo, Italy	1	39%	37mins	87hrs
Warsaw, Poland	2	39%	43mins	96hrs
Rome, Italy	3	37%	40mins	92hrs
Dublin, Ireland	4	35%	43mins	96hrs
Marseille, France	5	35%	38mins	89hrs
Paris, France	6	35%	38mins	89hrs
London, UK	7	34%	36mins	86hrs
Athens, Greece	8	34%	30mins	76hrs
Brussels, Belgium	9	34%	45mins	98hrs
Stockholm, Sweden	10			

Sources: TomTom European Traffic Index 2014

Cities can seek to reduce congestion by providing more road capacity or public transport (supply-side measures); and by seeking to influence travel demand and behaviour through measures such as congestion charging (a demand-side measure) (Jarl 2009). Based on the experience of congestion charging in London, Milan, Singapore and Stockholm, experts emphasize that a charge should be implemented as part of a package of transport measures. An important lesson is that a congestion charge must be accompanied by complementary services that provide a valid alternative to the car (Santos 2005 cited by Givoni 2011).

At a theoretical level, a congestion charge is different from road pricing (road tolls), even though they may be perceived by some highway users in the same way. Road pricing is typically implemented as a way of paying back the cost of a debt financed road – i.e. the road pricing toll is paid whether the road is congested or not. In comparison, congestion charges are targeted at providing economic disincentives for the use of congested roads at congested times (see the charging times for London, Milan and Stockholm in Table 2).

Drivers that used the congested road network prior to the implementation of the charge are presented with a number of choices. They can: use alternative roads; travel at times outside the peak hours; use other modes of transport; or decide that the trip is not necessary (TIDE, 2014; Jarl 2009). For each of these travel choices, environmental benefits can be realized as a result of: the decision not to use a private motorized car; or the reduced level of congestion (as summarized in Table 3).

Table 2: Overview of the London, Milan and Stockholm congestion charges

	London	Milan	Stockholm
Name	Congestion Charge	Area C	Congestion Tax
Date introduced and changes	Introduced 2003; a western extension was introduced in 2007, but this extension was removed at the end of 2010.	Ecopass in 2008, with upgrade to Area C scheme confirmed in 2013.	Introduced in 2007, following a referendum and 6 month trial in 2006.
Area covered	Central city area of 21km^2 bounded by the inner ring road (1.3% of total Greater London area)	City centre 'Cerchia dei Bastioni' Limited Traffic Zone (LTZ) of 8.2km^2 (4.5% of municipality)	Central area of 34km^2 (18% of the city area)
Charging times	07.00 – 18.00 (Mon to Fri)	07.30 – 19.30 (Mon to Wed & Fri) 07.30 – 18.00 (Thurs)	06.30 – 18.30 (Mon to Fri)
Charge cost[2]	£5 (€6.28) in 2003, increasing to £11.50 (€14.45) by 2014. Cost reduced by £1 if registered for Auto Pay. Residents and Ultra Low Emission vehicle Discounts (ULED) available.	€5 Residents have 40 free accesses per year and reduced rate of €2 from 41 st access.	5 to 20 Swedish kronor depending on time of day (€0.54 to €2.18). Maximum price for a day limited to 60 kronor (€6.53).
Exemptions from charge	Mopeds, motorcycles, emergency service vehicles, health service vehicles, vehicles for disabled people, other public utility vehicles.	Mopeds, motorcycles, electric cars, vehicles for disabled people, public utility vehicles, public transport vehicles and taxis. Hybrid, methane, lpg and biofuel vehicles exempt until 31/12/2016.	Emergency vehicles, buses >14 tonnes, fuel blend primarily consisting of alchohol, diplomatic cars, motorcycles, vehicles registered abroad, military vehicles. And vehicles with a permit: vehicles for disabled people, vehicles running partly or completely on electricity, gas (not LPG), and transportation vehicles <10 tonnes.

Sources: TfL 2014a, GLA (not dated), Jarl 2009

Table 3: Environmental benefits resulting from travel choices when a congestion charge is implemented

Travel choice	Reduced use of private motorized vehicles	Reduced pollution due to reduced congestion / traffic queuing
Use alternative roads		X
Travel at times outside peak hours		X
Use other modes of transport	X	

Decide the trip is not necessary	X	

Tackling congestion is an important goal of all congestion charges, but the emphasis given to associated environmental impacts by cities varies. For instance, in the case of Milan, environmental objectives were a primary driver for the implementation of the Area C scheme (ITF 2014, Mattioli et al. 2012). Widespread public concern about high levels of air pollution in the city led to the implementation of the Ecopass charge for access to the city in 2008. This was not found to be effective enough in reducing PM10 levels, so, during a city-wide referendum during 2012, 79.1% of voters supported an upgrade and geographical extension of the Ecopass scheme. The result was the implementation of the Area C congestion charge. As set out in Table 4, the explicit objectives of the Area C scheme covers a broad range of environmental and socio-economic objectives.

In contrast, the explicit focus of the London Congestion Charge scheme has been on the efficient operation of the transport system. The Congestion Charge was successfully introduced in 2003 with the following four stated priorities:

- to reduce congestion;
- to make radical improvements to bus services;
- to improve journey time reliability for car users; and
- to make the distribution of goods and services more efficient.

While the overall efficiency of the transport system is emphasized in the scheme objectives, a Transport for London (TfL) evaluation report states that the London Congestion Charge has also led to environmental and safety improvements. In addition, the charge has been successful in generating revenues to support implementation of the Mayor's Transport Strategy (TfL 2007).

In the case of Stockholm, the main goal of the congestion charge was to reduce congestion. A "better environment" was also considered a goal, but proponents were careful not to overemphasize this purpose or to promise too many environmental benefits. The project was never promoted as a way to raise money (Swanson 2009).

Table 4 provides a comparison of the explicit objectives of the London, Milan and Stockholm congestion charging schemes. This shows that reducing noise pollution has not been an explicit objective for any of these three congestion charging examples, although this may be captured in the objectives to improve the quality and attractiveness of the urban environment.

Table 4: Comparison of stated congestion charge objectives for London, Milan and the Stockholm congestion charging trial (see section 8 for more information on the Stockholm Trial).

London	Milan	Stockholm (trial)
-	Reduced air pollutant emissions: Total & Exhaust PM10; Ammonia; Nitrogen Oxides; Carbon Dioxide	Emissions of carbon dioxide, nitrogen oxides and particles in inner city air should be reduced
-	Reducing health risk relating to air pollution: less Black Carbon	
-	Decreased demand for use of public space for on-street parking	
-	Improving the quality and attractiveness of the urban centre	People residing or staying in the inner city should experience an improvement in the urban environment

London	Milan	Stockholm (trial)
-	Reduced vehicular access to Area C	
Reduced traffic congestion	Reduced traffic congestion	The number of vehicles in the congestion-charging zone during the peak periods of the morning and afternoon should be reduced by 10% to 15%
Improve journey time reliability for car users	Increased speed of private transport	Traffic flows should improve on the most heavily trafficked roads in Stockholm
Make radical improvements to bus services	Increased speed of public transport	
	Increasing the share of sustainable modes of travel	
-	Reduced road accidents	
To make the distribution of goods and services more efficient	-	
-	Raising funds for the development of mobility infrastructures: cycle lanes; pedestrian zones; 30kph zones.	More resources to be provided for public transport.

Sources: TfL 2014a, ITF 2014, SLB Analys 2006

[1] Rank 1 refers to most congested city. Table ranks amended to show only cities within the EU. Moscow and Istanbul rank highest in the TomTom European Traffic Index.

[2] Currency conversions undertaken on 12 August 2014 utilizing www.x-rates.com

Environmental benefits

The London, Milan and Stockholm congestion charging schemes can all be considered successful in achieving their stated aims. In broad terms, each of these congestion charging schemes reduced the numbers of private vehicles entering the charging area by around 20-30% (ranging from 21% in London, to 28.5% in Milan and 29% in Stockholm). Increases in the reliability and efficiency of public transport were also achieved.

As a result, the congestion charging schemes contributed to achieving the following primary environmental benefits:

- Reduction in CO_2 emissions and other air pollutants responsible for global climate change. CO_2 emissions reductions of 12% are recorded for London, increasing to as much as a 35% reduction for Milan.
- Reduction in air pollution, such as NO_x and PM10 that can cause health problems at a local or regional scale. For example, London recorded a 12% reduction in PM10 levels, with 15% and 18% reductions achieved in Milan and Stockholm respectively.

- Reduction in road and parking capacity requirements, creating space for other land uses such as public open space. Associated benefits could include the introduction of green infrastructure such as parks, street trees and planting, helping to protect and enhance local biodiversity and reduce stormwater runoff.
- Potential for reduced noise pollution, although this will depend on the travel alternatives available and the comparative noise profiles of cars, buses and motorcycles etc.

Further information on the achieved environmental benefits of congestion charging schemes is provided in the section 'Operational Data'.

Achieved environmental benefits over time

It is clear that congestion charging can have a significant and immediate effect on traffic levels, but consideration also needs to be given to long term goals and measures that could be taken to maintain environmental benefits. In the case of London, the average excess delay on roads inside the Congestion Charge zone was 2.3min/km in 2002 – the base congestion level before the scheme was introduced. This fell to 1.6min/km in 2003 when the Congestion Charge was implemented (a 30% reduction in congestion). The level of congestion remained the same in the following year, but started to increase thereafter. In 2005 and 2006 it increased to 1.8 and 2.1 min/km respectively, so congestion had almost returned to its pre-charging level in 2006 (Givoni, 2011). It is notable that London remains one of the more congested cities in Europe in 2014, featuring within the ten most congested cities in the TomTom traffic index.

Givoni (2011) advises that this is not itself a sign that the London Congestion Charge failed, as background travel demand is increasing and congestion levels could have been worse without it. Yet this situation does raise theoretical and practical questions for cities considering a congestion charge:

- Congestion charges can deter some drivers, but as congestion levels are reduced, others may find driving into the city more attractive. From an economic perspective this can be viewed as an optimal allocation of the available road capacity, however the environmental benefits of the scheme are compromised. Cities should therefore seek to identify supplementary measures that reinforce the attractiveness of alternative transport modes, with these being implemented in phases as congestion levels are reduced.

- It is possible that the effect of implementing a congestion charge could be offset by other organisations that decide to reduce parking fees inside the charging zone in response, especially for cities where a high percentage of car parking is provided by private companies rather than the public authority.

When compared to London, a similar initial impact was achieved with the Stockholm Congestion Tax, but this effect was maintained over time. The Stockholm example could therefore offer insights into how long term benefits can be realised.

Combined effects of congestion charging with other measures

Congestion charging is best implemented as one component of a package of sustainable mobility measures, which can make it difficult to differentiate between the environmental benefits attributable to each measure. For instance, in the example of the London Congestion Charge it is estimated that around 30,000 car users switched to bus transport during the period 2002 to 2003. What is not clear is what proportion of this success relates to the improvements to bus services implemented during this period, or the introduction of the Congestion Charge (Givoni, 2006). While this can make evaluation of congestion charging measures more challenging, this example reinforces the message that a charge should be designed to complement other transport initiatives.

Reducing levels of Air Pollution

It is reasonable to expect that congestion charging will result in some indirect environmental benefits, particularly relating to air pollution, although this remains an area of controversy. Studies which have looked in detail at air pollutant concentration data and estimated the environmental effect of congestion charges show mixed results (Givoni, 2006 referring to Carnovale & Gibson 2013 and Atkinson et al., 2009). Mattioli et al. (2012) advise that both supporters and opponents of congestion charging therefore sought to utilize the available evidence on this subject in Milan. In the run up to the Area C referendum, it is suggested that city officials in Milan sought to de-couple the proposed congestion charge from tackling levels of PM10 in the city, given the level of uncertainty on benefits. Nevertheless, the question of congestion charging has

remained framed in terms of air pollution amongst the general public as well as in the media.

A study by Carnovale & Gibson (2013) took advantage of an 8 week suspension of the Area C scheme[1] to assess the effects on air pollution with and without congestion charging. They concluded that Area C reduces traffic and improves air quality, but that the effectiveness of the scheme is undermined by certain driver responses. The effect of suspending the charge was that concentrations of CO_2 increased by 5.5%, ozone by 12% and total suspended particulates (TSP) by 16%, a significant change in air quality given that Area C represents only 5% of the city. It was found that drivers' responses to implementation of the charge were:

- Changing the time of travel to avoid the priced period.
- Using vehicles exempt from the charge, such as motorcycles and mopeds, for which exhaust emissions standards are currently less stringent than for cars (Europa, 2010)
- Use of roads outside the charging area.

If a congestion charge is to have greater environmental benefits, in particular reducing air pollution, it is necessary to carefully consider complementary measures. For example, careful definition of "exempt vehicles" and implementation of a Low Emission Zone (LEZ) alongside the congestion charge could prevent drivers switching to motorcycles and mopeds that can have poor emissions standards.

[1] In late July 2012, an Italien court unexpectedly suspended the Area C charge and reinstated it again approximately 8 weeks later (Carnovale & Gibson 2013)

Side effects

The implementation of a congestion charge can result in a variety of travel behaviour responses, with the result that some localised environmental impacts may shift from within the charging zone to the area nearby. Carnovale & Gibson (2013) report that some drivers responded to the Milan Area C scheme by driving around the city centre. For drivers seeking to avoid Area C, the natural route typically involves the Circonvallzione Esterna, a ring of larger roads located 0.6km – 2km from the Area C boundary.

As noted above, it has also been suggested that some drivers switched to travelling by motorcycle or moped in Milan, thereby avoiding the charge (a marginally significant increase in motorcycle use was detected by Carnovale & Gibson, 2013). While this shift to motorcycle use is beneficial in terms of easing congestion, as the vehicle takes up less road space than a car, the environmental benefits with respect to air and noise pollution can be limited (vehicle emissions standards for motorcycles are less stringent than those for cars).

If the greatest environmental benefits from a congestion charge are to be achieved, it is important that city administrations seek to predict the most likely travel responses and put in place complementary measures to mitigate potentially damaging cross-media effects

Applicability

Implementing a congestion charge is a significant financial and political undertaking and careful consideration needs to be given to whether it is the most appropriate measure for achieving the environmental goals of the public administration. The following questions provide a starting point for considering whether a congestion charging scheme is a transferable measure for a particular city.

- **How bad is traffic congestion in the city?** There needs to be sufficient public recognition and concern about congestion, and/or associated environmental impacts, if a charging scheme is to gain democratic support. In Milan it was the related issue of air pollution that led to the resounding referendum result (79.1% in favour of the scheme). Although this seems an obvious point, commentators have suggested that one reason for the "no vote" in the

Manchester congestion charge referendum was that congestion was not considered a priority issue for the city (see section 8 ‘Driving force for implementation’ for more information).

- **What is the current public transport modal share?** – Considering the conditions before implementation of congestion charges, Stockholm and London had high modes shares of public transport and low numbers of car ownership (Jarl, 2009). This means that the effects of a congestion charge would not be as pronounced, although still significant. In comparison, Milan has relatively low levels of public transport usage and therefore required either major public transport investment alongside the congestion charge and/or a congestion charge scheme that is designed to affect fewer road users (Jarl, 2009) by limiting the charge to a smaller part of the city.
- **Is the congestion charging proposal an element of a Sustainable Urban Mobility Plan?** – Experts advise that a congestion charge needs to be one part of a package of measures. If car use is to be restricted there clearly need to be alternative modes of transport in place that provide sufficient capacity, reliability and convenience. The preparation and adoption of a Sustainable Urban Mobility Plan (SUMP) provides the appropriate process for engaging stakeholders and assessing the suitability of complementary or alternative transport measures.
- **Taking into account the size and structure of the city, are there alternative measures that could be more appropriate?** – In smaller cities with a relatively compact, “walkable” city centre, the pedestrianisation of streets and dedication of more road space for public transport and cycling could provide an alternative means for discouraging car use. This approach has the benefit of simultaneously improving infrastructure for sustainable modes of transport. Congestion charging may therefore be most applicable for larger cities where limiting highway options and widespread pedestrianisation is not a practical solution.
- **What are the equity implications of introducing a congestion charge?** A concern previously expressed in relation to congestion charging is that people on lower income or specific social groups may be unfairly disadvantaged. A study undertaken in relation to the Stockholm trial and morning commuting found no clear pattern of increasing burden for people with either increasing income or decreasing income. It also found no significant difference in either the mode-switching behaviour or the average welfare effect for women versus for men (Karlstöm & Franklin 2009). Nevertheless, when designing a congestion charging scheme the potential equity implications should be taken into account, for instance, could a particular community be disadvantaged due to the boundary location of the congestion charging area and a lack of credible alternative modes of transport?

Economics

Information available for the London, Milan and Stockholm examples reveals wide variations in the cost of implementing and operating a congestion charge scheme (see Table 7). This is not so surprising given that the geographical area covered by the schemes ranges from 8.2km^2 in Milan to 34km^2 in Stockholm. There also appear to be variations in terms of what elements of associated infrastructure, such as public transport improvements and parking provision, are included in the costing information.

Table 7: Overview of the London, Milan and Stockholm congestion charges[1]

	London	**Milan (cost info for Ecopass scheme only - unofficial)**	**Stockholm**
Implementation cost	£200million (approx. €250million)	€7million	SEK 1,900million (approx. €207million)
Annual management cost	Implementation and operational costs spread over several years – see Table 7	€0.6million	SEK 220million (approx. €24milion)

Sources: Santos 2008, Rotaris et al. 2009, Eliasson (not dated).

When considering if a congestion charge is an appropriate measure, cost benefit analyses and projections of revenue generation can be utilised as helpful tools. A cost benefit analysis undertaken for the Stockholm scheme showed that the congestion charge yields a large social surplus, great enough to cover both investment and operational costs. Eliasson (not dated) reported that the value of the time gains compared to paid charges is remarkably high compared to most theoretical examples. It should be highlighted that cost benefit analysis techniques typically take a holistic approach, taking into account social factors, as well as the economic and environmental benefits of a scheme.

Reinvesting in sustainable transport modes

The London Congestion Charge provides a well-documented example of a scheme that has achieved revenue for reinvestment in other sustainable mobility infrastructure. Initial capital investment for the Congestion Charge project (excluding the western extension) was approximately £200million at 2002 prices, with the majority of funding provided by the UK central government. Table 8 presents costs and revenues for the 2002-07 period. With the exception of the financial year 2002-03, which is different because the Congestion Charge was introduced towards the end of it, the scheme returned significant revenue funding of between £82 and £120 million per year during this period (Santos 2008). In the case of London, all net revenue from the charge has to be reinvested in improving transport in the city by law, helping to make the charge more politically palatable (TfL 2014b).

Table 8: Annual Costs and Revenues of the London Congestion Charge project

Costs and revenues	2002-03	2003-04	2004-05	2005-06	2006-07
Total operating costs	£18mil	£98mil	£92mil	£88mil	£88mil
Total revenues	£20mil	£179mil	£197mil	£210mil	£208mil
Charge revenues	£19mil	£122mil	£120mil	£144mil	£154mil
Enforcement revenues	£1mil	£58mil	£77mil	£66mil	£54mil
Net revenues	**£2mil**	**£82mil**	**£105mil**	**£122mil**	**£120mil**

Source: Santos 2008

Given the financial success of the congestion charging scheme presented here, it would be expected that a broader cost-benefit analysis would return even stronger positive results, after factoring in: achieved environmental benefits of the charge; overall social utility (e.g. reduced congestion, road safety); and the additional positive effects from investment in other sustainable transport modes.

[1] Currency conversions undertaken during August 2014 utilizing www.x-rates.com

Driving forces for implementation

In addition to having large up-front capital costs, the implementation of a congestion charge takes tremendous political will. For a public authority to begin charging for use of roads that for decades have been free to access is bound to raise controversy. Along with the environmental benefits of a scheme, a major selling point for congestion charging can be the economic benefits. The EC estimates that congestion costs nearly €100billion or 1% of the EU's GDP annually, with congestion often occurring in and around urban areas (EC Mobility and Transport 2014).

The examples of London, Milan and Stockholm provide examples of how objection to proposed schemes was successfully overcome. In other cases, such as Manchester and Edinburgh in the UK, congestion charging proposals were rejected in public referendums and lessons can be learnt from the way proposals were presented to the population. A major conundrum for public authorities considering congestion charge proposals is that public support tends to increase

significantly after the commencement of a scheme (Jarl 2009). The question therefore is, how can support be rallied before key decision-making events?

Popular support for the Stockholm Congestion Tax increased from 36% in 2005, before the introduction of the scheme, to 74% in 2011 (VCÖ, not dated). In order to help foster support for the proposal, a full-scale trial of congestion charging preceded the public referendum held in 2007 (Givoni, 2011), at which a "yes" vote was secured by a narrow margin of 51%. The trial lasted seven months and was costly to implement, as Stockholm's transit system was very keen to prove that it would be up to the challenge of increased useage (Swanson, 2009). Public transport was extended with 197 new buses and 16 new buslines. This provided an effective and fast alternative for travelling at peak hours from the municipalities surrounding Stockholm into the inner city. Where possible existing bus-, underground- and commuter train lines were reinforced with additional departures.

It is clear that a very high level of political commitment was required to justify this level of expenditure for a trial, although this meant the move to a permanent scheme could be undertaken relatively quickly. Eliasson, Director of the Centre for Transport Studies at Sweden's Royal Institute of Technology, has advised that in other cities where congestion pricing would significantly enhance the efficiency of the traffic system, the Stockholm "try before you buy" approach may be the key for voter buy-in. This view is supported by others:

"Modelling results actually showed quite accurately what the effects [of the congestion charge] would be, so I didn't think [the trial] was needed. But then I realized that people didn't actually believe that it would have an effect on congestion. They needed to see it to believe it." (Mattson from the Royal Institute of Technology, quoted in Swanson, 2009b)

The failed referendum in Manchester in 2008 provides an example of where there was both a lack of clarity on congestion charging objectives and these were not perceived to be the highest priority issues by the city's population. The implementation of a congestion charge in Manchester was a pre-condition set out by the UK national government for the city to receive a further £1.5 billion of government funding for investment in transport. Swanson (2009) identifies a number of reasons for why 80% of people voted against the congestion charge, which include:

- congestion is not so bad in Manchester, especially compared to London;
- the link between the charge and public transport investment was not clearly explained, or was interpreted as "money grabbing"; and
- resentment for central Government and the imposition of a tax during a downturn in the economy.

Based on a review of the experiences of London, Stockholm and Manchester, Swanson (2009a) usefully identifies four core messages for a congestion charging campaign:

1. Define the problem – If the public are to be persuaded that congestion charging is necessary, it is essential to clearly define and articulate the problem that the scheme is designed to address. For instance, congestion was a recognized problem in London and Stockholm. Leaders in those cities did not need to waste time convincing the public of that fact. In contrast, congestion was not a significant problem in Manchester.
2. Explain the solution – A high level of investment plus a clear, simple message regarding the role of congestion charging in the wider transportation plan for the area is vital to winning public support. Longer-term education is also important. In London, sustained marketing and education has helped to build public understanding and support for the transportation system as an integral part of the cultural and economic identity of the metropolitan region.
3. Show the benefits – The public shouldn't be expected to simply accept radical change without experiencing the benefits. Demonstrating to the public that the new charge will lead directly to tangible transportation-related benefits is a pivotal aspect of gaining support for the scheme. In both London and Stockholm, congestion charging was accompanied by major improvements in public transit.
4. Demonstrate leadership and earn the public's trust – The underlying theme is the importance of cultivating and maintaining the public's trust in the ability of leader's to act efficiently and with integrity.

Reference organisations

In addition to the frontrunner schemes highlighted within this best practice, a number of other cities within Europe have introduced congestion charging schemes (TIDE, 2014):

1986 Bergen

1990 Oslo

1991 Trondheim

2001 Nord-Jæren, Oslo Package 2, Rome central area

2002 Durham

2003 London

2005 Bologna, Edinburgh referendum rejects charging scheme, Trondheim scheme ends.

2006 Stockholm trial and referendum

2007 Stockholm becomes permanent scheme, London adds westerns extension

2008 Milan Eco Pass

2012 Milan scheme changed into Area C

2013 Gothenburg

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