



## Congestion and road-use charge

### Key points

- **Roads are not a free resource. Private cars generate congestion, air pollution, greenhouse gas emission, noise, vibration and other forms of environmental and social costs plus general wear and tear of roads.**
- **Heavy traffic can be eased by charging private vehicles access to public roads. The charge should reflect the extra costs the road user causes.**

### Congestion and road-use charge explained

Sometimes called a congestion charge (drivers are charged only in highly congested areas or times of the day), road-use charging is one way to confront road users with external costs, which otherwise would go unpaid. Road-use charging rationalizes road space so that it is used only by those who are prepared to pay for the costs they impose on the greater society.

### How it works

Road-use charging can take several forms:<sup>1</sup>

- **Road tolls** – generally found on highways and bridges, where the fee is collected each time a motorist uses a stretch of road.
- **Cordon tolls** – drivers are required to pay for entering a particular area, usually the city centre.
- **Distance-based fees** – drivers are required to pay for each unit of distance travelled. This includes schemes currently being considered in Europe in which cars are tracked via satellite and charged according to their movement.

These three types can be applied in a way that the charge differs according to the level of congestion. Although real-time measurements of congestion could be reflected in the price, proxy indicators are used in practice, such as the time (hour) of day and the day of week.

### Strengths of congestion road-use charges

- A road-use charge cuts down on traffic levels and thereby reducing the social and environmental costs.
- The flexibility means that a fee can reflect the “real” costs of certain users to society. Thus, a higher fee could be charged for heavy-goods vehicles (which impose a larger degree of wear and tear on the infrastructure), or cars entering the congestion charge zone at the most congested times of the day can be made to pay a higher fee.
- The generated revenue can be invested into public transport.

### Challenges to imposing a road-use charge

- Lack of certainty over the impact on traffic, such as spillovers onto other roads.
- Opposition by the public, media, local businesses and politicians.
- Lack of the technology required to monitor and enforce the scheme.

<sup>1</sup> Todd Litman and Rowan Steele, *Land Use Impact on Transport: How Land Use Affects Transport* (Vancouver, Victoria Transport Policy Institute, 2011). Available from [www.vtppi.org/landtravel.pdf](http://www.vtppi.org/landtravel.pdf) (accessed 26 February 2012).

## Implementing strategies

**Bolster political leadership with supportive data:** Public opposition can be mitigated through strong political leadership, supported by public communication of the long-term benefits of congestion or road-use charging, including the reduction of traffic and associated environmental and social impacts.

**Back up credible projection and piloting:** Extensive ex-ante modelling and piloting can help portray the consequences of the congestion or road-use charge on traffic patterns, including unexpected spillover effects (such as increase in traffic on certain roads that are not under the congestion charge).

**Recycle revenue towards public transport:** Financial revenue raised from the scheme can be redistributed to support public transport and other forms of sustainable transport. Public awareness is also an important factor; making the public aware that the revenues generated will be invested into public transport or highway maintenance may help gain their acceptance.

**Incrementally increase the amount charged:** Easing the public into the change and the new charges with gradually imposed increments can alleviate public resistance.

**Provide alternative modes of transport:** Public transport and non-motorized transport should be available to cater to the demand for mobility.

### BOX 1: Tips for a road-use charging scheme

**Charging system:** The charges should take into account existing taxes and charges. Various methods can be implemented for pricing, such as a flat entry fee or variable charging system based on time, distance and place of driving. Introducing minimum and maximum limits for distance-based charges make them more acceptable.

**How to zone the areas:** The zones depend on local conditions, size of the city and the extent of roads subjected to congestion. The area should be zoned in a way that safeguards against anyone avoiding the charge when driving through.

**Time frame:** Peak time is the most congested. It is sensible to implement the congestion charge in peak hours. The London congestion charge operates from 7 a.m. to 6 p.m. Monday–Friday. There's no charge on weekends and public holidays. Some cities operate the charging scheme 24 hours a day, 7 days a week.

**Types of vehicle to be subjected to the scheme:** All vehicles should be subjected to the scheme to make considerable impact on the congestion. However, discounts and exemptions must be given to greener vehicles, emergency vehicles for accidents or breakdowns, residents' vehicles within the zones, high occupancy vehicles to encourage car sharing and high-occupancy disabled persons' vehicles.

**Technologies used will decide the implementing costs:** The congestion charge can be enforced in various ways: manually by tolls, electronically by using smart cards or automatically using automatic number plate recognition cameras. Manual operation is the most cost effective. Automatic and electronic systems are relatively expensive, but are more reliable than the manual systems. There should be a balance between reliability and operational costs.

**Implementing costs and payback period:** Implementing costs depend on the enforcement methods. The average payback period is 2.2 years, varying from 3.1 years for the London congestion charge to 1.8 years for Hong Kong, China, road pricing.<sup>2</sup>

<sup>2</sup> Jack Opiola, "London congestion charging" PowerPoint presentation at the International Transportation Finance Summit, Nice, France, 17–19 April, 2005. Available from [www.ibtta.org/files/PDFs/Opiola\\_Jack.pdf](http://www.ibtta.org/files/PDFs/Opiola_Jack.pdf) (accessed 16 November 2011).

## Examples

**Singapore:** An electronic road pricing scheme has been operational since 1975, mitigating the city from dead-lock.

**Stockholm, Sweden:** Congestion charging was successfully invoked on a permanent basis in 2007 through careful public consultation and referendums.

**London, United Kingdom:** The revenues from the congestion charge are used to improve bus service quality and other aspects of the public transport network.

## Further reading

*Congestion Charging* (London, Transport for London, 2007). Available from [www.cclondon.com/whatis.shtml](http://www.cclondon.com/whatis.shtml).

*Success Stories within the Road Transport Sector on Reducing Greenhouse Gas Emission and Producing Ancillary Benefits* (Copenhagen, European Environment Agency, 2008). Available from [www.eea.europa.eu/publications/technical\\_report\\_2008\\_2](http://www.eea.europa.eu/publications/technical_report_2008_2).

"The CEDAR Project: Charging electronically by distance and road", by John Walker and others, Paper 3038 at ITS World Congress, Stockholm, 21-25 September 2009.