

## Road Pricing and Congestion Charging

### Definitions

Road pricing means charging for the use of roads in a way that reflects the costs of using them - paying more when roads are congested and less when traffic is light. Congestion charging is a form of road pricing that aims to reduce motor vehicle travel into congested urban areas.

### Context and Policies

Road pricing is a form of demand management that has become accepted as a policy measure to combat pollution and congestion. Motorists are encouraged to change their habits, travelling at different times or by different routes, possibly to alternative destinations, or making their journey by public transport and/or non-motorised transport (on foot or by cycle). Road pricing works best when applied in parallel with other measures, such as public transport improvements and provisions for cyclists and pedestrians. Road pricing is a tool to reduce congestion and thereby improve air quality and standards of health. It can also reduce the need for new or widened roads. Key stakeholders are vital to the success of a pricing scheme, and must be consulted effectively to raise the level of awareness and support.

### Examples

**The Central London Congestion Charging Scheme** has been in operation since February 2003 and was extended westwards in February 2007. During its hours of operation, drivers of vehicles are required to pay a standard daily charge of £8 (increased from £5 in July 2005) to travel within the Congestion Charging zone, subject to a number of discounts and exemptions. The principal aim of the scheme is to reduce congestion by encouraging drivers to switch from private car use to other modes of transport. It also produces net revenues to support London's Transport Strategy (in the 2007/08 financial year these amounted to £137 million, allocated mainly to improvements to bus operations). Following its introduction in 2003, congestion was substantially reduced within the zone and traffic entering the zone was reduced by around 20 per cent. The initial traffic and congestion reductions led to overall CO<sub>2</sub> reductions of 16 per cent inside the charging zone, a reduction of emissions of oxides of nitrogen (NO<sub>x</sub>) of eight per cent and fine particulate matter (PM<sub>10</sub>) of six per cent.

**The Singapore Area Licensing Scheme (ALS)**, introduced in 1975, was the first urban congestion pricing scheme to be successfully implemented in the world. Motorists had to purchase daily or monthly licences to enter the 6-square-kilometer central area during restricted hours (called the "Restricted Zone") - later increased to 7.25-square-kilometers. Car pools with four persons including the driver were exempt from paying the congestion charge. The initial drop in traffic entering the Restricted Zone was 44% (31 % by 1988) due to diverting away from the city centre those motorists whose destinations were not the city itself but had merely been using the city roads as short cuts, as well as by those who changed their journey start time to avoid paying the ALS fees. There was little evidence



Photo credits: ERP gantry at North Bridge Road. Singapore © 2005 mailer\_diablo

### Resources

#### Documents

- **Central London Congestion Charging: Impacts monitoring Sixth Annual Report**, 2008, Transport for London (UK)
- **CfIT World Review of Road Pricing Phase 2 - Case Studies**, 2008, WS Atkins, Commission for Integrated Transport (UK)
- **CfIT World Review of Road Pricing Phase 2 - Final Report**, 2008, WS Atkins, Commission for Integrated Transport (UK)
- **Congestion Pricing: A Primer: Overview**, 2008, Office of Transportation Management, Federal Highway Administration (USA)
- **Green Urban Mobility - transport plans for the Copenhagen capital region**, 2008, City of Copenhagen (Denmark)
- **International Experience with Road and Congestion Pricing and Options for Johannesburg**, 2008, T. M. Ueckermann and C. Venter, University of Pretoria (South Africa)
- **Road Pricing - A Guide to Public Understanding**, 2004, Institution of Civil Engineers, London (UK)
- **Road pricing: Can the technology cope?**, 2006, The Green Light Group, Institution of Civil Engineers (UK)
- **Road Pricing: Singapore's Experience**, 2002, Dr Chin Kian Keong, Land Transport Authority, (Singapore)
- **Road pricing: What are the facts?**, 2007, Institution of Civil Engineers, London (UK)
- **Towards a Policy on the Imposition of Road Tolls in the City of Cape Town**, 2003, R.M. Haiden and B. Floor, City of Cape Town (South Africa)

#### Presentations

- **Congestion pricing and parking policy in the Netherlands**, 2009, Karel Martens, Institute for

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to suggest that motorists had transferred to public transport in significant quantities.

### The Singapore Electronic Road Pricing (ERP)

Scheme replaced the Area Licensing Scheme (ALS) in September 1998. The ERP is an innovative tool for implementing congestion pricing. The basic idea of ERP is similar to the ALS, but charges can be varied over time and location, reflecting the true cost of vehicle use. All 33 ALS "gantries" (entry points) were replaced with ERP gantries for the 720 ha core area. Each vehicle to enter the restricted zone is fitted with an "In-vehicle Unit" (IU) that reads from a stored-value cash card, from which charges are deducted automatically as soon as vehicle enters the restricted zone. ERP charges vary each half-hour of the day, from S\$2.50 during peak hours to 50 cents during off-peak, depending on the road section. Charges are different for motorcycles, cars, cargo vehicles, taxis and buses. ERP charges are subject to review every three months to suit changing traffic conditions. Charges are tied to prevailing speeds with the aim of maintaining traffic speeds of 45-65 km per hour on expressways and 20-30 km per hour on arterial roads.

**The ECO-PASS Scheme in Milan** has been in operation since January 2008. It is designed to restrict access to an 8-sq-km inner area of the central area of Milan by charging the vehicles that pollute most heavily. Ecopass aims to make the air cleaner by reducing PM emissions by 30% and relieve congestion by reducing the number of incoming cars by 10% (and thereby speeding up public transport in the area). Money raised will go towards buses, cycle paths and green vehicles. The Ecopass Area has 43 entrance points, each equipped with CCTV cameras designed to record vehicle licence plate numbers and pollution class. An Ecopass costs between two and 10 Euros for the most polluting models. Electric, hybrid, and some low-polluting cars are exempt. The city is seeking to raise 24 million Euros a year and will invest about two-thirds in improving public transportation. About 90,000 cars cross the charge area daily of which 39,000 cars enter the zone between 7:30 a.m. and 5:00 p.m.

**The Stockholm Congestion Charge** is a congestion pricing system implemented as a tax that is levied on most vehicles entering and exiting central Stockholm, Sweden. The congestion tax was implemented on a permanent basis on August 1, 2007, after a seven-month trial period between January 3, 2006 and July 31, 2006. The primary purpose of the congestion tax is to reduce traffic congestion and improve the environmental situation in central Stockholm. The funds collected are used for new road constructions in and around Stockholm. Since beginning operation, the charge has resulted in a 15% reduction in traffic and a 10-14% drop in CO2 emissions.

**Other cities:** Durham (England), Znojmo (Czech Republic), Riga (Latvia), and Valletta (Malta) have implemented congestion pricing schemes.

Management Research, Radboud Universiteit Nijmegen (Netherlands)

- **Road Pricing Strategy in Singapore**, 2006, Loh Chow Kuang, Deputy Director, LTA Academy, Land Transport Authority, (Singapore)

### Recommended Links

- **Congestion Charging, Transport for London (UK)**
- **Road User Tolling & Congestion Charging (UK)**

### Issues

Pricing and congestion charging schemes can be viewed as unfair and politically risky. Privacy can be key issue. A congestion-charging scheme in Hong Kong was abandoned partly because people thought their movements might be tracked. Another concern is fairness. Should poor motorists pay a larger proportion of their income than rich ones? Experience shows that this depends on how the congestion charge revenues are spent. Congestion charging is likely to be more acceptable if the revenues subsidise services predominantly used by lower-income groups, such as buses.

Edinburgh initiated an implementation process in 2002. A referendum was held in 2005, with a majority of residents rejecting the proposal. In 2007, New York City shelved a proposal for a three-year pilot program in Manhattan, and a new proposition was denied in 2008. Councils in the West Midlands (UK) rejected congestion pricing schemes in 2008.

### Actions

There are two ways of charging for road use. One is to measure the distance travelled by road users. The other is to charge a fixed fee for travel into or within a zone or along a section of highway or a special lane. With both systems, charges can be varied according to vehicle type and time of day or week. Payments can be made online, by telephone, SMS or by smartcards (direct debit or monthly accounts).

### For More Information

The report "Road pricing. Can the technology cope?" published by the UK Institution of Civil Engineers (ICE) and available in the gTKP Knowledge Centre (see Resources: Documents, above), sets out the "ingredients for success" for road pricing schemes, based on international experience.

### For further information

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