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ROAD PRICING IN AN URBAN CONTEXT

Road pricing is a general term that involves applying direct charges to a vehicle for the use of a specific road or access to a road network. Charging such fees is not new. Examples of road or bridge tolls date back to the early times of recorded history. Over the last thirty years or so there has been more widespread interest with the concept of road pricing in response to increasing road congestion. Notable advocates have been economists, applying the perspective of rationing a finite "good" among competing users based on micro-economic supply and demand principles whereby pricing influences consumer behaviour and choice. Similar principles have been applied to variable pricing for access to telephone service, utilities and air travel. Also, the development of technology that enables more efficient and less costly collection of road fees has contributed to more interest in road pricing. To date most of the dialogue concerning the broader application of road pricing has been within academic and professional groups but it is expected that the public will become more engaged as more applications appear.

Given the increased attention to this subject, the Urban Transportation Council considered it timely to produce an overview of the context, elements, issues, and challenges regarding road pricing, plus an outline of potential groundbreaking initiatives. This Briefing is not intended to be an exhaustive technical document on the subject. Rather it is a high level synopsis to enable discussion and debate. The intended audience is elected representatives, senior government officials, transportation sector representatives and special interest groups.

This Briefing does not reflect a technical or policy position of TAC.

Background

There continues to be increases in private vehicle ownership and use notwithstanding some limitations in road capacity. Road space is often limited because of environmental concerns, property constraints for road expansion, financial constraints or even intentional policy objectives to limit road expansion. The significant increase in congestion in major urban areas has impacted economic efficiency, the environment, public health and social well-being and has contributed to general concerns of unsustainable societal behavior. These conditions have led to the question of whether road pricing could provide support for the achievement of sustainability objectives including a viable approach for transportation funding and more effective management of demand.

Sustainable Development:

All governments today in Canada subscribe to strategic sustainable development principles and many have developed specific objectives and policies relative thereto. From an urban planning perspective, the development of a more compact urban form is viewed as fundamental to the achievement of a more sustainable future, supported by a broader choice of travel modes through transit expansion and more extensive accommodation for active transportation. A compact urban structure also supports climate change objectives by reducing greenhouse gas emissions from private vehicle use and through opportunities for central heating and cooling. The application of road pricing measures could support these urban planning objectives by influencing choice of residential and business location, reduction in trip lengths and more conservative use of private vehicles. From a broader perspective, road pricing can also be applied to mitigate environmental impacts associated with the use of road systems.

Transportation Funding:

The adequacy of transportation infrastructure funding continues to be a major issue. There is insufficient public funding available for the renewal of aging transportation infrastructure and public funding for system expansion is limited. The latter constraint is particularly problematic for the provision of major transit facilities notwithstanding their compatibility with sustainability objectives. To complicate matters, it has been postulated that revenues

from fuel taxes could decline on a relative basis given the decrease of gasoline consumption resulting from the rise of gasoline prices, use of smaller vehicles, alternative motive power technologies and the emphasis on environmental regulations that focus on more conservative use of the private vehicle. There is a need for more sustainable funding for infrastructure upkeep, renewal and expansion. Road pricing could be part of the solution since it could provide predictable funding for transportation initiatives if the revenue is dedicated for such uses.

Demand Management:

Road pricing is also viewed as a policy tool to influence transportation demand. It has been suggested that eventually measures will have to be applied to ration limited road space in view of the projected severity of congestion caused by increased private vehicle use and limited road expansion. Congestion in itself rations road space but with economic, environmental and social consequences. Charging for the use of the road system could exert a market discipline to the consumption of this resource and therefore provide a more rational and efficient means for this rationing. In particular, differential charges by route location, trip length, time of day and type of vehicle could influence the choice of mode, time of trip, and length of trip thereby influencing the demand profile for more effective utilization of road capacity.

Road Pricing Applications

There are a number of current international road pricing applications with a wide range of different objectives, fee structures, transaction charging methods and technology. The different types of road pricing applications can be generally categorized into four classes:

1. *Tolls on specific elements of road infrastructure* such as bridges, tunnels, expressways and separated lanes. These are usually defined by specific access and egress points with manual or electronic toll systems. The tolling system can be "open" (tolls collected at single points) or "closed" (vehicle detection at both entry and exit points and tolled based on distance). Examples are the 407 ETR in the Toronto area, and the City Link and Eastlink electronic toll roads in Melbourne, Australia.
2. *Tolls on integrated networks of expressways and higher functioning roads.* Charges are usually applied at points within the network, either manually or electronically. An example at the national level is the French motorway system in which about 8000km (or 75%) of the national system is tolled. A second example is the German national autobahn system whereby heavy goods vehicles (HGV) greater than 12 tonnes are electronically tolled based on distance, class of vehicle and number of axles (this is also a variation of 4 below).
3. *Access charges to defined urban areas.* Charges are usually applied electronically at a cordon that defines the perimeter of these areas. There are a number of examples including Singapore, Oslo, Stockholm and London.
4. *Charges on vehicles as a per kilometre fee for the use of the road system.* These charges would be applied with the use of on board satellite tracking technology. This approach would typically be applied to large regional areas or even nation-wide. There are no current examples in operation that apply to all vehicles but exploratory work is being undertaken in the Netherlands and in the UK, as outlined later. The German HGV system noted in 2 above utilizes GPS technology to track and apply distance based tolls.

There are no standard definitions of various applications of road pricing. However, the following are in general use:

- *Urban road pricing* refers to fees charged in urban areas;
- *Area licensing* is an earlier form of access charge to a defined area using special pre-purchased licenses;
- *Congestion pricing* refers to fees applied to specifically reduce congestion;
- *Environmental pricing* refers to fees charged with the intent of reducing environmental impacts from traffic;
- *Value pricing* is a term that has originated from the use of High Occupancy Toll (HOT) lanes whereby vehicles with less than the occupancy requirements for preferential use of the lane can pay a fee for such preferential use.

Within the scope of this Briefing it is not possible to provide details of the range of specific road pricing applications. An excellent source of information is available on the web site for the UK Commission for Integrated Transport at: *www.cfit.gov.uk/docs/2006/wrrp/wrrp1/index.htm*. This site also provides addresses for specific road pricing applications in operation so current information can be obtained. The table herein titled "Overview of Selected Road Pricing Applications" provides a high level summary of some of the more recognized schemes and their basic characteristics.

OVERVIEW OF SELECTED ROAD PRICING APPLICATIONS

Location	Year of Introduction	Primary Objective	Secondary Objective	Type	Charges	Technology
Singapore	1975 (Original)	Reduce congestion in CBD	Encourage use of transit	Cordon based CBD access plus expressways and outer ring roads	Variable: • fee periodically changed depending on travel speeds • by vehicle type	• OBU with inserted debit card • DSRC with gantries • ANPR for enforcement
www.lta.gov.sg						
Oslo, Norway	1990	Revenue - dedicated for transport investment in Oslo		Cordon based central area access	Flat fee depending on vehicle weight	• In vehicle transponders • Toll booths for manual payment • ANPR for enforcement
San Diego, California (I-15)	1996	Originally to achieve more effective use use of prior HOV lanes and therefore to relieve conges-tion on main route	Revenue generation	High Occupancy Toll (HOT) lanes. With recent expansion, now called Managed Lanes	Dynamic Variable Pricing for single occupant vehicles – price per mile varies with congestion.	• In vehicle transponder using DSRC
www.sandag.org		www.fastrak.511sd.com				
Toronto, Canada 407 ETR	1997	Provide additional expressway system capacity	Revenue generation for expanding and extending the highway.	Toll "closed" facility – per kilometer toll fee	Variable by: • Time of day • Vehicle type	• In vehicle transponder using DSRC • ANPR for payment without transponder • Gantries at entry and exit ramps
www.407etr.com						
Melbourne, Australia	2000	Reduce congestion in CBD	Improve access for freight associated with port	• Toll facility • Two routes: City Link (22 km) Eastlink (39 km)	Fee for toll zones	• In vehicle transponder using DSRC ANPR for enforcement
www.vicroads.vic.gov.au						
London, UK	2003	Reduce congestion in central area	• Encourage use of transit • Revenue dedicated for transport investment	Cordon based central area access	Pre-or post-paid flat fee	ANPR (for charging and enforcement)
www.cclondon.com						
Santiago, Chile	2004	Reduce air pollution by alleviating severe queuing / congestion	Provide new infrastructure through private concessions	Tolled urban roads network	Variable by time of day	• In vehicle transponder using DSRC • ANPR for enforcement
Germany	2005	Revenue for maintenance and road system improvements	Allocate costs to HGVs which cause dispro-portionate share of road wear	HGV distance charges on national autobahn system	Variable charges for HGV>12 tonnes based on: - class of vehicle - number of axles	• OBU – GPS for charging • ANPR for enforcement
www.toll-collect.de		www.bmvbs.de/en				
Stockholm, Sweden	2007	Reduce congestion	• Improve environment • Encourage transit use • Revenue dedicated for transport investment	Cordon based central area access	Variable by time of day. Vehicle owners invoiced monthly.	ANPR (for charging)
www.vv.se/templates/page3__1715.aspx						

CBD = Central Business District OBU = On-board unit HGV = Heavy Goods Vehicle
DSRC = Dedicated Short Range Communication ANPR = Automatic Number Plate Reading

Critical Success Factors:

The international experience to date suggests that primary factors for public acceptance and continued operation of road pricing schemes are the pre-existence of a major congestion problem, transparency of objectives and revenue allocation, and cost effective operation. Also, an essential requirement is the establishment of a legislative and regulatory framework specific to the road pricing regime.

- Public and political acceptability.

  Fundamental to gaining public support is the need to be absolutely clear about the objectives of the scheme. Typically these are one of the following or a combination thereof:

  - primarily to finance improved or new roads and/ or transit facilities (such as in Norway);
  - primarily to modify demand in order to provide relief to congested roads (such as London, Stockholm and Singapore);
  - to accommodate full cost accounting related to the vehicle use of roads.

  Also, it is critical to be absolutely transparent regarding the allocation of the revenue; in most cases revenues are earmarked for transportation projects.

- Compatibility of scheme design and fee structure with policy requirements.

  Experience to date has also shown that the design of the system must be compatible with the policy objectives in order to sustain public support. For example, for a congestion management scheme, utilizing an approach that varies fees by time of day and traffic conditions provides the maximum flexibility to improve the reliability of the road system operation.

- Cost effectiveness.

  Minimizing capital costs and operating costs is a major challenge given the complexities of the schemes and the reliance on technology. In particular, data communication and enforcement of the system are key cost contributors.

Technology:

Electronic technology is now a central element of road pricing schemes. The selection of the technology depends on the objectives and the charging structure. Road pricing applications generally involve the following core functions supported by an appropriate technology platform:

- vehicle detection and recording of its use;
- transfer of data to a processing centre (back office);
- transaction and payment processing involving customer service;
- enforcement respecting missing or defunct in-vehicle devices and/or fraudulent activity.

Technology is still advancing but there are basically four types of proven technology utilized, often in combination:

- Automatic Number Plate Reading (ANPR) utilizes cameras typically mounted on gantries above passing vehicles to record license plate numbers and utilized for either charging and/or enforcement.
- Dedicated Short Range Communication (DSRC) is the technology utilized for in vehicle transponders that communicate with roadside (or overhead) units for recording location and transaction charging.
- Satellite tracking devices commonly referred to as GPS – Global Positioning Systems. A more advanced version (Galileo) is under development in Europe. Basically, an on-board GPS device in the vehicle communicates with several satellites and the vehicle position can be tracked.
- In-vehicle tachograph that can be connected to the other on board devices for measuring travelled distances.

Objectives and Associated Benefits of Road Pricing

Current and proposed road pricing schemes are generally based on objectives and associated benefits that fall within the following:

- Raising dedicated revenue for the renewal of infrastructure and for the expansion of road and transit systems;
- Establishment of a market-based and more efficient revenue collection system, thereby providing the opportunity for a more disciplined decision-making process regarding the setting of investment priorities;
- Reduction of road congestion and improved road operating conditions, particularly through the application of a variable charging structure by time of day and traffic levels. A basic factor in traffic engineering is that, for congested roads, a relatively small reduction in traffic volume (range of 10-15%) can restore conditions to a more reliable level of service;
- Opportunity to charge for road usage costs on a more equitable basis given the expected change in

vehicle mix such as electrically powered vehicles (therefore no fuel tax and also no mobile emissions) as well as the opportunity to apply an environmental charge for vehicles that consume excessive amounts of fuel ;

- Potential to modify behaviour and therefore transportation demand, particularly toward less travel and change of mode to transit and active transportation;
- Potential to ration road space through setting appropriate charging levels;
- Support for economic, environmental and social sustainability objectives.

Challenges and Issues

There are a number of challenges regarding public acceptance, viability and implementation of road pricing schemes. The relevance and severity of these varies depending on the prevailing conditions, type and objectives of the proposed scheme, charging structure, and public confidence in governance structures.

***Public acceptance*:**

- negative public reaction in view of traditional and perceived "free" access to roads that were built originally with funding from general tax revenues;
- objection to the notion of double taxation (fuel tax and road use charge) unless traditional taxes and fees are eliminated in place of a road user charge; related public suspicion about the efficient utilization of existing tax revenue;
- the natural human tendency toward "loss aversion" (i.e. people are reluctant to give up a benefit even if the new measure provides an overall additional net benefit);
- the concern of privacy invasion, unless it can be clearly demonstrated that privacy of vehicle location and routing can and will be protected;
- the concern about accuracy and legitimacy of the kilometres logged by the charging system;
- the concern about revenue allocation - whether the revenue would be dedicated for the transportation system or whether it would be allocated to the consolidated government revenue fund that could be then utilized for other purposes as decided by government.

Social equity:

- the concern that road pricing would detrimentally affect those in a lower socio-economic category, whose live/work locations are often widely separated in view of mismatches between affordable housing accommodation in proximity to lower paying jobs; also, such jobs quite often have rigid work hours thereby limiting the choice of when and how to travel;
- many higher salaried positions involve the perquisite of a vehicle or vehicle allowance including operating cost assistance;
- it would be impractical for many individuals to switch modes or to be able to avoid traveling in peak periods on the road system.

Economic competitiveness:

- the concern that the imposition of road pricing in a defined area (such as a central business district) could result in regional economic disparities if it is not implemented in adjacent areas as well;
- negative perceptions could affect business location and investment decisions even if road pricing were introduced in a way such that there would be no net increase in total operating fees;
- for schemes that involve a per kilometre fee charge for access to the entire road system, there is an issue about how to deal with residents and businesses of rural areas who typically have to drive longer distances.

***Institutional/Jurisdictional*:**

- agreement among multiple government agencies that could be involved with the implementation, operation and enforcement aspects of road pricing in a multi-jurisdictional area;
- establishment of an effective governance framework with appropriate political, administrative, and revenue allocation mechanisms, as well as monitoring, evaluation and oversight;
- the distribution of revenue among government infrastructure and operating agencies that are competing for scarce financial resources, and among programs associated with environmental sustainability including global warming mitigation.

Implementation:

- whether and how to introduce and/or expand alternative measures and modes such as transit services ahead of the commencement of road pricing;
- how the value of the user charge would be established, particularly with respect to the inclusion of externalities and uncertain demand elasticity;
- how to deal with occasional users of the system such as visitors and how to deal with enforcement measures and associated fines and penalties;
- the deployment of requisite on-board electronic equipment for vast numbers of vehicles and the associated policies respecting acquisition or lease;

- issues of inter-operability of the new electronic devices with any legacy devices and systems;
- issues related to exemptions and/or fee discounts;
- the general difficulty of pre-determining the impacts within a traditional accepted range of confidence, and therefore having to accept that adjustments may have to be undertaken through a trial and error approach, which is contrary to the typical risk averse culture of government;
- for schemes that involve a per kilometre fee charge for access to the entire road system, the complexity of managing the transition to such system; the introduction of these schemes would require government to take actions that could have long term benefit but would also invoke short term political risk.

Potential Groundbreaking Initiatives

Apart from recent interest generated by current area access schemes such as in London and Stockholm, there are two developments under consideration for national road pricing plans that are notable. The basis of both is a per kilometre fee for vehicle use of the road system that would replace current vehicle license and fuel taxes. Charges would be applied according to distance travelled, time of day, route location and type of vehicle. These initiatives are driven by a belief that area specific or facility specific road pricing applications will not be sufficient to meet long term sustainability objectives including economic security and environmental quality. Moreover, per kilometre pricing is seen as a more appropriate method to achieve effective demand management and predictable transportation system funding. It is also viewed as a more transparent and equitable method of transportation cost allocation.

The Netherlands

The Netherlands is at the forefront in the development of a unified national road pricing scheme[1]. The Netherlands is a very compact country containing close to 17 million inhabitants. Road congestion is extremely severe with consequent economic, social, and environmental impacts. In late 2007, the Dutch cabinet decided to implement a national road payment system based on a kilometre charge. The new charging system is part of a broader package of initiatives pertaining to a comprehensive transportation policy of the central government. The primary goals of the kilometre charging system are to provide:

- a fairer distribution of costs by paying for use of the road system rather than for the possession of a vehicle
- improved accessibility to benefit the economy
- improved environmental quality and road safety.

This endeavour is a major government undertaking and without precedent. It involves extensive research, planning, consultation with public and industry interest groups, system design, tendering, new legislation and regulations, operational policies and procedures, operational frameworks for the collaboration of multiple organizations, the establishment of an implementing body and so on. A substantial amount of research has been undertaken and there are several published documents available for review. The document *"Making a start on a price per kilometre"*[2] published in December 2007 by the Ministry of Transport and Water Management is a convenient summary of the research to date as well as a synopsis of the technical, legal and implementation challenges.

The new system is not intended to raise additional revenue but rather to redistribute costs. People who use their vehicle on a minimal basis will pay less whereas people who use their vehicle a lot will pay more. One of the fundamental elements of the new scheme is that the road tax (called MRB) will be phased out and the vehicle purchase tax (BPM) will be reduced. Also, cars that cause more pollution will pay more than cleaner vehicles. It will cost more to travel in peak periods than in off-peak periods, with the intent that the higher peak charge will result in a reduction of peak period traffic volumes. In summary, the national per kilometre pricing will be differentiated by time of day, place and vehicle class. Revenue from the new scheme will be dedicated for the financing of construction, management and maintenance of the road system.

The precise price per kilometre and its variants have not yet been set. Also, the method of payment is still under consideration although it has been determined that the system will be based on satellite tracking technology. A major challenge is to minimize operating costs of the

[1] The UK Government is also pursuing road pricing but the difference is that implementation will reside at the local authority level and will be elective.

[2] www.verkeerenwaterstaat.nl/english/topics/mobility_and_accessibility/roadpricing/index.aspx

new scheme which will apply to about 8 million vehicles. Experience to date from existing road pricing applications has revealed that costs associated with data communication, back office processing and enforcement can be problematic. An extreme case is the London Congestion Charge where the operating costs are reported to be about 50% of the revenue. A stipulated condition of the Netherlands scheme is that operating costs shall be as low as possible and no more than 5% of the revenue. Extensive consultations have been undertaken with private sector technology providers to examine possibilities to reduce costs in collaboration with the market and by seizing opportunities resulting from rapid technological developments.

The planned schedule for implementation involves starting with freight transport in 2011, which requires extensive technical and policy-related cooperation with neighbouring countries of Belgium, France and Germany. This is to be followed with automobiles, with the entire system to be fully operational by 2016. There will be extensive trials to test the technology and to assess the impacts of the new scheme. Key steps are now underway toward meeting this schedule, in particular:

- preparation for amending legislation
- development of required process to adapt the current vehicle taxes
- establishment of an implementing body plus the back office administrative and processing functions
- testing the technology.

The preparation of the amending legislation is an extensive effort unto itself. The schedule calls for the draft Bill to be forwarded to the Lower House in late 2008 or early 2009 in order for the legislation and its associated regulations to be ready by early 2010. Only then can the tendering process proceed.

The investigation of the technology options has focused on four central elements:

- equipment in the vehicle to determine geographical position and time
- data communication between the vehicle and back office
- calculating the charges and invoicing through a combination of in-vehicle and back office data processing functions
- active enforcement to detect and discourage fraud and evasion.

The findings to date are that: the first can be handled with GPS/Galileo satellite navigation; the likely candidate for the second is mobile cellular technology; the third has options for either heavy or light in-vehicle data processing (with the converse in the back office); and the fourth will require a combination of mobile and roadside fixed equipment.

It is most likely that the final technology configuration will involve the use of in-vehicle equipment for satellite navigation and mobile communication. A secondary utilization and benefit of this could be additional applications such as:

- variable insurance rate policies based on kilometres driven
- direct payment of parking fees and automated parking enforcement
- collection of dynamic traffic data and real time traffic management
- vehicle identification related to theft prevention and retrieval of stolen vehicles.

United Kingdom

The UK government has embarked on a public debate regarding the consideration and examination of road pricing at a national scale. A number of key reports and events pertinent to this debate help to outline the background and development of this issue.

Public interest in the UK became more active with the release of the 1998 Transport White Paper "A New Deal for Transport" which stated that the government would empower local authorities to introduce congestion charging schemes. The Transport Act 2000 subsequently provided local authorities with the necessary powers to implement road pricing schemes subject to approval by the Secretary of State. The publication in July 2003 of the report entitled "Managing our Roads"[3] by the Department for Transport provided the context for the consideration of a national scheme. This document set out the challenges facing the road system over the ensuing 25 years, not the least of which was the projected increase in congestion and its effects on the economy, society and the environment. It concluded that it would not be feasible to build a way out of the problem and instead measures need to be undertaken to make better use of the available capacity including the application of road charging. On the basis of this report, the Secretary of State for Transport authorized the undertaking of a feasibility study for a national road pricing scheme. The

[3] http://www.dft.gov.uk/pgr/roads/network/policy/

output of this study was the publication of a report in July 2004 entitled "Feasibility Study of Road Pricing in the UK"[4].

Subsequently in 2005, the national government instituted a Transport Innovation Fund (TIF) to provide funding for local authorities to institute schemes to tackle congestion and improve productivity, including road pricing as part of a broader package of demand management tools. Also in 2005, Sir Rod Eddington was jointly commissioned by the Chancellor of the Exchequer and the Secretary of State for Transport to examine the long-term links between transport and the UK's economic productivity, growth and stability, within the context of the Government's broader commitment to sustainable development. His final report "The Eddington Transport Study"[5] was published in December 2006. This was accompanied by the release of a study report prepared by the UK Commission for Integrated Transport[6] entitled "World Review of Road Pricing"[7], also in December 2006.

The 2004 study report *"Feasibility Study of Road Pricing in the UK"* focuses on whether and how road pricing might work, not whether it should be adopted. A number of key points emerged from the study:

- Public acceptability and trust is the pivotal challenge – people need to agree that it would deliver a solution to a problem that they can see needs addressing, that they will have choice available to them particularly in terms of alternative forms of transport, and that it is not just a means of raising more revenue;
- Per mile charges would vary depending on location and time of day; current fuel tax and road tax would be eliminated;
- The key advantage is that it will improve the reliability of road system performance by reducing congestion in those areas of the road network that are or will be severely congested;
- A one size fits all approach is unlikely to satisfy the public given the range of travel needs and behaviour that extends across variant social and geographic characteristics;
- Growth in congestion will occur mostly in outer urban rather than inner urban areas; the former typically have fewer transit alternatives;
- Technology is key to the implementation of a national road pricing scheme.
- Implementation on a national scale would be a major challenge. This would involve such tasks as the development of a consensus on objectives and evaluation criteria, establishment of the appropriate enabling legislation and institutional structure, deciding on price structure and funding for pre-requisite complementary measures, and decisions regarding the allocation of net revenue;
- "This is not the stuff of big bangs" - a lengthy transition process would be necessary;
- The overall conclusion is that road pricing is becoming feasible, that it could meet the governments objectives, and that the national government needs to take steps immediately

"The Eddington Transport Study" report of 2006 documents a comprehensive review of the relationship between transport demand and the consequent economic, social and environmental implications. It underscores that increasing congestion presents a significant risk to the future economic performance of the country. The report states that from an economic and environmental perspective, demand management through proper pricing should play a major role in slowing the future rate of growth in demand. Given the scale of the congestion challenge, the report states that there is no attractive alternative to road pricing; without it, the UK will require significantly more transport infrastructure. The report also cautions governments to guard against developing investment plans in anticipation of road pricing and then delivering neither pricing nor the investment that would be required without road pricing – the worst of both worlds.

The *"World Review of Road Pricing"* (2006) involved a review of emerging road pricing schemes and focused on area-wide applications such as the ones in London and Singapore rather than link-specific pricing applications. The report concluded the following:

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4 http://www.dft.gov.uk/pgr/roads/introtoroads/roadcongestion/feasibilitystudy/studyreport/

5 http://www.dft.gov.uk/about/strategy/transportstrategy/

6 The Commission for Integrated Transport is an independent body established in the 1998 Integrated Transport White Paper 'to provide independent advice to Government on the implementation of integrated transport policy, to monitor developments across transport, environment, health and other sectors and to review progress towards meeting our objectives'.

7 http://www.dft.gov.uk/about/strategy/transportstrategy/

- New emerging schemes are not expected to be implemented in the short term; none appears to have the necessary legislative framework in place.
- The majority of emerging schemes are framed by local and/or regional policy but no national policy; the exceptions are the UK which has a national policy framework that provides opportunities for the development of local and/or regional schemes and the Netherlands which actually has a national policy for the implementation of a national scheme;
- Tackling congestion is the primary objective of the majority of emerging schemes; the majority also define objectives for tackling poor air quality and addressing climate change;
- None of the emerging schemes is expected to be revenue or fiscally neutral; net revenues would be applied mostly to improve local transit;
- Most schemes are considering cordon or area-licensing with only a few identifying distance based charging as a long term objective;
- Public acceptability is considered to be the major challenge in all schemes.

Notwithstanding these activities, the UK government has made it clear that there is no present intention to implement a national road pricing scheme. Rather the government prefers that local authorities take advantage of incentives provided by the government to institute customized local road pricing schemes in the context of an overall congestion management approach. In keeping with this direction, the government introduced a draft Transport Bill on May 22, 2007. The draft Bill deliberately contains a package of measures to address the congestion challenge, including provisions under which local authorities can introduce local road pricing schemes in a manner that best suits local needs while ensuring that any schemes are consistent and interoperable. The draft Bill also sets out proposals to enable local authorities to improve the quality of local bus services as a key element of measures to complement road pricing. The draft Bill does not include powers to allow for the imposition of a national road pricing scheme; separate legislation would be required in the future to introduce such a scheme. The government provided for a consultation process in 2007 and has issued amendments to the draft Bill for further consideration. There has been no indication as to when Parliament is expected to vote on the Bill.

A further government initiative has been the provision for undertaking demonstration projects to explore the systems and technology that could make road pricing schemes possible. Such projects will involve simulations of how a road pricing scheme (charging by time, distance and place) could be designed so that it can safeguard people's privacy whilst operating reliably, accurately and effectively. Pre-qualified companies have been invited to bid to be part of a framework that will run the demonstrations over the next two years.

Concluding Observations

- Road pricing is a policy tool for government that should only be applied in the context of clearly defined objectives. Public and political interest is typically driven by evidence of recurring severe congestion, environmental degradation and lack of adequate transport financing.
- The achievement of public acceptance and the cost effectiveness of the system are key challenges.
- Road pricing should only be considered within a long term perspective. Given the complex institutional and implementation issues, incremental steps would need to be taken and confirmed by successive governments to achieve and sustain an operational system.
- Depending on the scope of the application, implementation and operation would require the establishment of appropriate legislative authority, an appropriate institutional and governance framework, and prerequisite supply of alternative transport modes, particularly transit.
- Given the requisite technology platform, an intensive effort is required to develop unambiguous specifications and a rigorous procurement process.

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While TAC and the authors endeavoured to ensure that all information in this briefing is accurate and up to date, they assume no responsibility for errors and omissions.

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