

PUBLIC-PRIVATE PARTNERSHIPS FOR URBAN ROAD NETWORKS

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ABSTRACT

Urbanisation will increase rapidly in the coming decades, putting severe strains on urban infrastructure networks and the liveability of cities, especially in developing economies. Authorities are facing various constraints in providing efficient urban road networks: these are of physical, fiscal, technical and organisational nature.

Looking at 11 international case studies, the paper identifies four key benefits induced by a PPP approach to urban road projects, whether it concerns development or maintenance of urban roads. These are the high quality solutions and level of service offered; continuous attention and secured funding for urban roads; ceased innovation and optimisation opportunities, and early materialisation of socio-economic benefits. The latter is an especially important factor as many urban road capacity problems rise in gravity and urgency quickly.

A number of issues emerged from the case studies as well, like willingness to pay for road tolls in urban areas, the availability of up to date and sufficiently detailed information on the road assets that are being transferred, the level of competition needed and the necessary capacity with local authorities to deal with highly complex projects and contracts.

1. INTRODUCTION

In 2005, almost 5 out of 10 people across the globe lived in an urban area of 1 million inhabitants or more. World urbanisation prospects compiled by the United Nations suggest that this number is likely to increase to almost 6 out of 10 people in 2030. This would mean that upwards of 4.97 billion people would be living in cities and urban agglomerations by that time [1].

Urbanisation undeniably places growing pressures on urban transportation networks. It confronts the responsible authorities with the dilemma of how to maintain them in good condition and with sufficient capacity to meet increasing urban transport demands, while at the same time keeping cities 'liveable'. Clearly, one of the main problems associated with rapid urbanisation is the increasing congestion occurring on urban road networks, leading to decreased access to economic destinations in urban areas, which constitutes an important factor in determining economic competitiveness.

This paper, reflecting the work of the IRF working group on Public-Private Partnerships (PPP), looks into what benefits a PPP approach can offer in terms of helping the authorities overcome the constraints they face in dealing with this constant quandary.

2. WHAT ARE THE SPECIFICS OF URBAN ROAD PROJECTS?

Complexity is the key element when looking into the specifics of urban road projects. This chapter briefly highlights the most distinguishing features of road projects situated in an urban, as opposed to inter-urban, context.

2.1 Physical constraints

The first obvious characteristic of urban road projects is that they have to be developed in a physically constrained environment. In general, space for extension of urban road networks is limited. Existing road networks are dense and often intertwined with other transportation networks, such as mass rapid transit. Scarcity of land in an urban setting implies high land acquisition costs. The physical constraints force private sector partners to devise innovative solutions for the design, construction and operation of a project.

2.2 A demanding audience

2.2.1 *Public scrutiny*

Because of their proximity to people's daily lives and habitat, urban road projects tend to be at the forefront of public attention. Urban road projects are more likely to precipitate protest actions than inter-urban projects – and are more likely to require thorough integration and mitigation measures to reconcile community needs.

2.2.2 *Commuter needs*

Commuters are special road operator clients in the sense that they make use of urban road networks on a daily basis. They are experienced, have a lot of expectations and demand high levels of service. Commuters place high value on the availability of the road and do not easily tolerate disruptions. These specific user needs must be taken into consideration when designing the project and forecasting operational needs. A customer-oriented approach is vital.

In the case of the Attica Tollway, built around Athens, Greece, a comprehensive mechanism was developed in order to provide a high level of service and safeguard the anticipated "value" derived from tolls. Over 6 years of full operation of the Attica Tollway (up to the time of writing), the average time saving perceived by users has been 30 minutes, and 60% of electronic toll collection has been recorded during peak hours. During the same period, the emergency response time has averaged 5 minutes – compared to the contractual obligation of 15 minutes.

2.3 Direct economic impact

In general, urban road capacity problems have a direct impact on the overall economic performance of the given area. The costs of urban congestion, notably in terms of travel time delays and increased fuel consumption, have risen sharply over the past three decades – as, for example, illustrated by data from the 2009 Urban Mobility Report of the Texas Transport Institute [2], depicted in Figure 1.

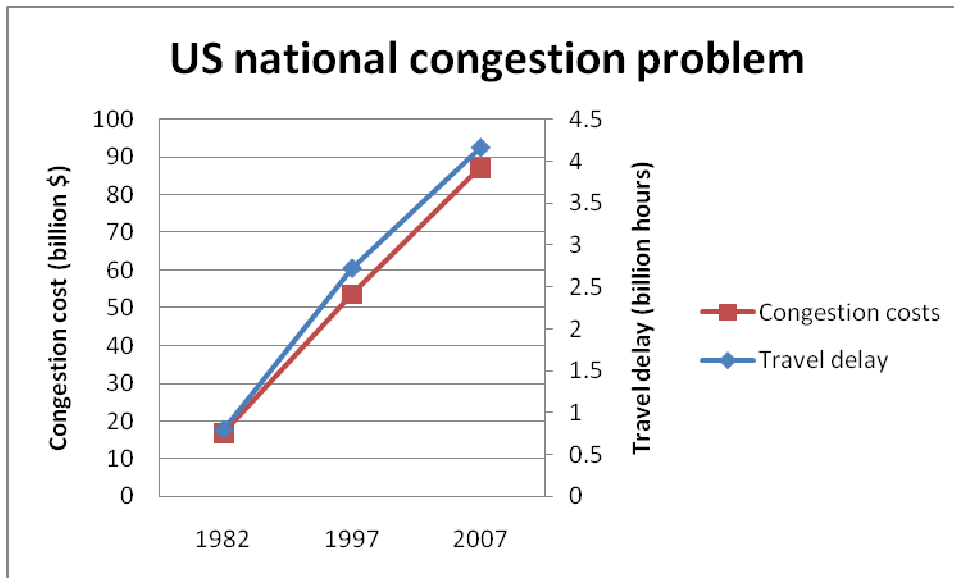


Figure 1 – Congestion costs and travel delay due to urban congestion in the United States (data source: urban mobility report 2009, Texas Transportation Institute)

The need to implement urban road projects aimed at relieving congestion – whether they involve network extensions or more efficient operation of existing roads – is seen as an urgent priority.

2.4 Additional constraints faced by authorities

When public budgets are allocated, transportation infrastructure is competing with other public service needs. Transportation budgets are not generally sufficient to keep the infrastructure up to pre-defined service levels. When budgets do become available, they tend to be of a short/medium tenure that does not adequately meet the need for sustainable financing – to cover the continuous investments required to keep urban road infrastructure up to standard.

Furthermore, tight links between project planning and other key disciplines, such as spatial planning and social policy, render urban road projects highly complex endeavours from a technical point of view. In terms of organisation, there are often several authorities having responsibilities in the urban jurisdiction, which again adds a layer of complexity.

Authorities need capability and competence in several disciplines in order to be able to deal with technically and organisationally complex projects. Such breadth of capacity is not always present, especially in local administrations. A recent KPMG study into success factors for urban transport infrastructure projects concluded that: “many elements need to be right to deliver a successful project, of which effective procurement and financing appeared to be the most important (...)” [3]. This underlines the importance of authorities having the prerequisite expertise and effectiveness in place when involving the private sector in a project.

3. CASE STUDIES OF URBAN PPP PROJECTS

3.1 Key elements of Public-Private Partnerships

Before going into the benefits captured by a PPP approach, by reference to the urban projects studied, it is essential to outline what IRF considers to be the key elements constituting a PPP agreement. In essence, a PPP agreement between a (local) authority

and a private sector partner is a means of shaping the contractual relationship for a road project in terms of risk allocation, financing & revenue schemes, and performance. The key elements of PPPs are:

- Combining several tasks in a single contract: in PPP contracts the private sector partner is generally responsible for the design, construction, financing, maintenance and operation of the given road.
- Relative autonomy for the private sector partner: PPP contracts are service level oriented; deliverables are specified in terms of functions and qualities. The “lack” of detailed work description leaves a substantial measure of freedom for the private sector partner in the planning and organisation of activities – in order to optimise the project and implement cost effective solutions as well as to maintain a high service level.
- Specific risk sharing arrangements: risks are made explicit in order to be able to allocate them between the client authority and the private entity in a PPP contract. The PPP partner can take up risks that are within his control to manage and/or mitigate. For other risks, which are not controllable, sharing mechanisms may be applied.
- Specific cost recovery mechanisms: in a PPP arrangement, the private entities can be reimbursed by tolls, shadow tolls or performance-related annuities paid by the client authority – or a mixture of these sources, generally geared towards ensuring incentives.
- Joint or private financing: the share of private finance in PPP varies according to the type of contract and cost recovery mechanism. Projects with private pre-investment of construction works, availability payments or shadow toll arrangements can be described as jointly financed by the public and private sectors. A toll concession contract is an example of a fully privately-financed project.
- Long term duration of the partnership: the duration of PPP contract can vary and depends on many factors, e.g. the amount capital investment needed to build the infrastructure, the revenue mechanism used, etc.

3.2 IRF case studies of PPPs for urban roads

IRF has undertaken a number of case studies of different types of urban partnerships, with the aim of identifying the specific challenges and learning how these may be addressed through a partnership approach. A working classification of urban PPPs has been adopted in order to provide a broad distinction between cases, and to cover a wide diversity of possible schemes:

- Urban congestion charging: schemes that impose a fee on vehicles to enter a certain cordoned area within an urban zone – implemented through a partnership contract under which both public authority and private partner bear financial risks. Variable pricing schemes that fulfil the partnership criteria are also considered to belong to this category.
- Urban toll roads: toll motorways in urban areas that have been allocated through concessions to private operators. The private operator generally designs, constructs, maintains and operates the road, in exchange for the right to levy tolls on the users. High Occupancy Toll (HOT) lanes would also fall within this category.
- Combined road and real estate developments: schemes under PPP in which functions/aspects like road development, housing development and/or business accommodation are combined to achieve optimum quality, and promote a viable business case by enabling cross-subsidising of project-elements.
- Urban road operation partnerships: schemes under PPP that aim at making better use of existing urban road infrastructure capacity by mobilising Intelligent Transportation Systems (ITS). Projects based on partnerships for parking schemes and/or interfacing

with other transport modes, like mass transit systems and rail, could also be included under this heading.

- Long-term maintenance contracts for urban road networks: schemes under PPP concerning long-term maintenance (sometimes including upgrading) of the urban road network, in which revenues are based on performance.

Table 1 gives an overview of the case studies. For each case, the Working Group has – among other aspects – looked into the rationale for a PPP approach, the urban context, the partnership structure, difficulties overcome and societal benefits.

Category	Case studie(s)
Urban congestion charging	91 Express Lanes, California (United States)
Urban toll roads	M6 Toll (United Kingdom) Melbourne CityLink (Australia) A14, Paris (France) A86 West, Paris (France) Attica Tollway, Athens (Greece)
Combined road and real estate developments	A2 Maastricht (Netherlands)
Urban road operation partnerships	M50 Dublin, rehabilitation and installation of electronic toll collection (Republic of Ireland)
Long term maintenance contracts for urban road networks	Birmingham Highways Management PFI (United Kingdom) Portsmouth Highways Management PFI (United Kingdom) St. Louis-de-France, Quebec (Canada)

Table 1 – Overview of IRF urban PPP case studies

4. BENEFITS CAPTURED FOR URBAN ROAD PROJECTS THROUGH A PPP APPROACH

In a publication released in 2008, IRF highlighted the economic advantages of PPPs for road works [4]. In summary, these advantages were optimisation of work planning and organisation by the private partner, combined with enhanced service-level orientation and innovation – resulting in high-quality solutions and service for the road user.

Moreover, there is a growing body of evidence to suggest that a PPP approach leads to projects that are implemented in more timely fashion and with less budget overruns, as illustrated by a study commissioned in 2007 by Infrastructure Partnerships Australia [5]. According to this study, cost overruns amounted to only approximately 1.2 % of the total costs of contracted PPPs; whereas for traditional contracts the cost overruns were close to 15% of the total costs. The study further concluded that PPPs were more often completed on schedule compared to traditional contracts, and that project size did not affect this timeliness advantage of PPPs.

This chapter identifies the specific benefits captured through a PPP approach for the projects studied.

4.1 Efficient urban solutions and high level of service

A PPP approach very often enables the introduction of alternative, more efficient solutions for the particular road capacity problem faced by authorities. This paragraph will address a number of determining factors.

Firstly, due to the lifecycle costing and stringent level of service requirements inherent in the very concept, urban PPP partners are obliged to devote significant thought during the design and construction stages to ensuring quality projects. This qualitative element is, therefore, at the forefront from the very inception of a project, during the bidding stage – and is reinforced by the specifications laid down by the authorities in a typical tendering process for a PPP.

As alluded earlier, ready availability and access to the road infrastructure is even more important in an urban context than with inter-urban projects, due to specific commuter needs. A PPP approach – whether it involves a toll project or a scheme based on availability fees paid by the authorities – is particularly adapted to this reality as there is a clear incentive for providing increased availability of the road, given that level of service is made an integral part of the contractual obligations.

Secondly, clearly defined performance requirements, and penalty/incentive regimes provided for in the contract, effectively ensure continued quality and the maintenance of service levels throughout the full duration of the partnership. For example, in the case of the 91 Express Lanes in California, USA, a policy is applied to reimburse tolls if significant actual congestion occurs. In the case of the Portsmouth PFI, the private partners' remuneration is composed of a monthly lump sum fee and a shadow toll for heavy goods vehicles, minus deductions for failure to meet performance specifications. These mechanisms provide important disincentives or “sticks” for not meeting quality requirements.

Thirdly, the case studies reveal that most of the projects have included regular customer surveys and feedbacks – whether contractually required or simply deemed desirable by the private operator concerned. This aspect is of particular importance for urban projects, where a large proportion of users are regular commuters who have a good understanding of the service they expect, as well as its importance. It is very uncommon (if not virtually unseen) to come across such customer emphasis and feedback loops in traditional urban road projects.

For the Attica Tollway, a users' survey is carried out every year in order to measure customer satisfaction. Thus, for example, in 2010, 95% of users were found to be satisfied with safety on the Attica Tollway, and almost 98% declared themselves “very” or “rather” satisfied with the behaviour of personnel manning the toll stations.

On the A14 in Paris, detailed customer satisfaction studies are carried out on a regular basis. This allows for a better understanding of the customer base, as well as user needs and expectations regarding the infrastructure and services. It also enables the evolution of user needs to be monitored over time, thereby facilitating the identification of specific emerging needs that may not have been originally forecast or taken into account.

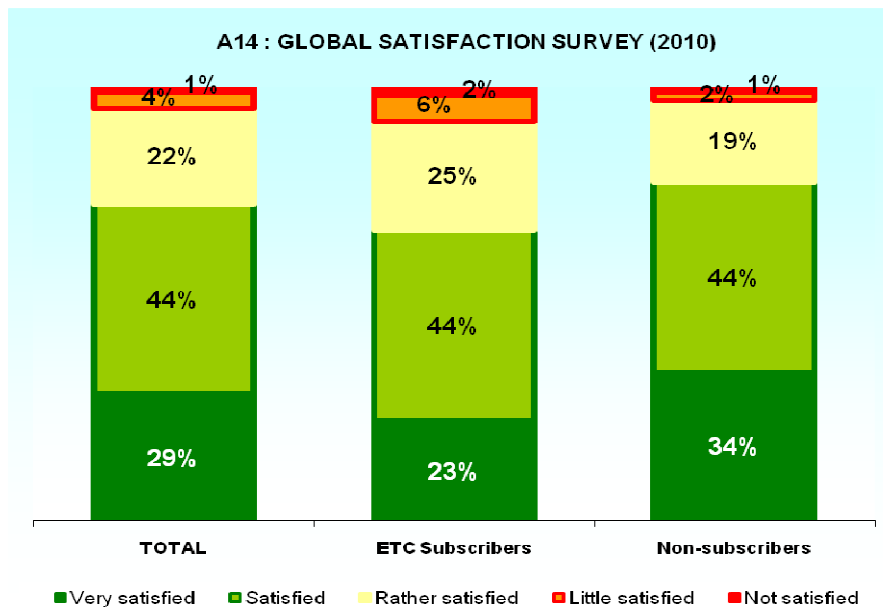


Figure 2 – A14 customer ratings 2010, distinguishing between subscribers and non-subscribers to the electronic toll collection programme in place (courtesy of SANEF)

Finally, in an urban PPP, the public entity can focus on monitoring and enforcing the service level and contractual requirements, rather than being necessarily involved in both implementation and control. The respective roles and responsibilities are clearer, and there is less risk of conflicting interests.

4.2 Continuous attention and funding for urban roads

In a PPP, irrespective of whether it's for construction, operation or maintenance costs, funding has to be forecast and modelled over the entire duration of the partnership. The detailed financial plan has to undergo a thorough risk analysis, taking into account downside scenarios. It follows that the PPP partner has to fully secure the financing for the project and prove funding resilience. In some case, this will include foreseeing financial reserves.

As funding is forecasted in advance, there is hardly any room for perceived arbitrary decisions to cut budgets, lower service level or reduce the quality of the infrastructure due to political decisions regarding public budget restrictions. The obvious benefit is that funding is secured for the duration of the contract whereas with a conventional approach, funding is subject to annual public decision-making cycles, in which road infrastructure is in competition with other public services.

For example, before the Portsmouth Private Finance Initiative (PFI) was concluded, the Portsmouth City Council (PCC) had only been able to carry out general reactive maintenance on its road network due to budget constraints. Under the PFI, the road network has been brought back to appropriate standards during a “core investment” period and will continue to be maintained to these standards throughout the duration of the contract till 2025.

4.3 Greater socio-economic benefits, materialising sooner

The most common, and generally most important, socio-economic benefit resulting from a PPP approach to urban road projects is the time saved on project implementation. Under a PPP approach, there is a clear capacity to deliver projects – which in some cases may have been delayed for decades – faster. This is due to the contractual structure and the

secured funding; factors that are particularly relevant in the case of urban road projects given the specific challenges and inherent complexity. By way of example, the A14 near Paris (a 900 M€ investment) was built in less than five years, including design studies, public consultations, expropriation (compulsory purchase) and construction.

The 91 Express Lanes in California, United States, were constructed as the result of a call for proposals for demonstration projects of transportation PPPs issued by the Californian State Department of Transport (CalTrans) to the private sector. No state financial support was to be available for the projects. Out of four proposals received, the 91 Express Lanes project was the only one that was implemented in a timely manner. The main component of the socio-economic benefits that have resulted from the project has been travel time savings. Well-publicised reports by Edward Sullivan, of the California Polytechnic State University (Cal Poly) [6], refer, among other advantages, to savings of 12-13 minutes per trip on normal traffic days. Moreover, dramatic proportionate reductions in travel time delays affecting the existing free lanes were also recorded; from 30 to 40 minutes per trip before the opening of the express lanes, to around 12-13 minutes 18 months after they came into operation.

Enhanced mobility and accessibility generally facilitate overall economic development and improve people's quality of life. With urban PPP projects, these aspects are enhanced even further through better and more efficient utilisation of the infrastructure, accompanied by increased level of service.

The Melbourne CityLink provides a good example of an acceleration of much needed investment in road infrastructure. The estimated economic growth attributable to the project is AUS\$ 300 Million, representing a significant increase in GDP. The north-western suburbs of Melbourne benefited from improved accessibility and a faster pace of development, while users enjoyed the advantages of reduced travel times and increased travel time certainty.

Similarly, the Attica Tollway in Greece played a critical role in the development of urban and land-use planning requirements for the metropolitan area of Athens. The undoubted success of the project is evidenced by the fact that the number of entries exceeds forecasts by 30%. Indeed, the Attica Tollway has not only given rise to significant improvements in traffic conditions in the metropolitan area of Athens, but has also produced tangible benefits for the economy and overall development.

4.4 Innovation and optimisation

It is widely recognised that PPPs - whether at bidding stage or later throughout the life of the project – foster innovations. This tends to be even more the case with urban PPPs, as the complexity and the need for integration within a more global transportation network, necessitate ever-greater emphasis on inventiveness and optimisation. Several examples provide vivid illustration.

In the case of the A86 West toll concession project near Paris, the French state opted for an underground route in order to safeguard forests, historical heritage and inhabited areas. Cofiroute, the private sector partner involved, came up with an unusual solution consisting of two superimposed independent carriageways in a single tunnel tube, with each “floor” carrying traffic in one direction. The tunnel is reserved for use by light vehicles with a maximum height of 2 meters.

The extended duration of PPP contracts, coupled with the partnership relationship, provides a key incentive for innovation and research & development. It enables the private partner to run the whole innovation cycle – from the conception of an idea, through concept development and product testing, right up to technical implementation when the benefits finally become apparent.

The tendering process and the competition this entails are also keys to innovation; not only with respect to the technical construction aspects (methodology, pricing, timeframe) but also the operation and integration of the infrastructure. Firms are stimulated to try and gain competitive advantage through innovative ideas and concepts.

In a number of cases, innovative cross-financing mechanisms have been implemented to enable the overall economic viability of the project. Two examples are highlighted here. For the M50 Dublin project in the Republic of Ireland, two separate contracts have been issued – one for the rehabilitation of part of the M50 ring road around Dublin and the other for the installation of an Electronic Toll Collection (ETC) system to replace the toll plaza. The revenues from the electronic tolling will be partly used by the Irish National Roads Authority to pay the annual availability fee due to the private partner handling the rehabilitation component.

The A2 project in the city of Maastricht, the Netherlands, entails the reconstruction of an urban section of the current motorway into two underground tunnels, one above the other. The surface area thus freed will be used for the ‘green carpet’ development of real estate and public areas – with revenues from the real estate being applied towards financing the infrastructure development and green spaces.

5. ISSUES HIGHLIGHTED BY THE URBAN PPP CASE STUDIES

A number of issues, which seem to be more or less common to the projects under review, emerged from the urban PPP case studies. Some of these issues are specifically related to the use of tolls; others more to the complexity and long duration of PPP contracts. They are introduced briefly below.

5.1 Dealing with future developments

A common concern related to long-term contracts is how to cater for future developments. At the time of contract negotiations, a number of likely developments in the near future can be readily anticipated. Further into the life of the contract, however, such predictions become increasingly difficult. Overall, in PPP contracts there is:

- a) The necessity for the private operator to stay at the forefront of the expectations of the client authority and the road users;
- b) The willingness of, and incentives for, the private partner to “sweeten” the project with new developments (with direct or indirect compensation).

Mechanisms to cater for future developments should be anticipated in the original contract. For example, on the A14 project near Paris, an additional intermediate interchange (at a cost of approximately 40 M€, fully financed by the concessionaire, SAPN) was built ten years after the opening of the main motorway, thus further contributing to the accessibility of the Chambourcy/St Germain area. While French and European Union legislation both permit a certain flexibility with regard to additional investment and/or adaptation of the infrastructure, the key element remains the negotiation process that takes place between

the partners – notably whether a need is expressed by one of the parties, and whether both derive value from the proposed adaptation.

Clauses that are too strict regarding future developments might lead to the demise of the project. This was the case with the original contract for the 91 Express Lanes in California, USA. In 1999, the California Department of Transport (CalTrans) initiated plans to widen the Riverside Expressway. This was, however, in violation of a non-compete clause in the concession agreement. The clause stipulated that, in order to ensure the profitability of the express lanes, no improvements (including widening the free lanes or building a mass transit transport link) could be implemented along 48 km of the Riverside Freeway during the contract period. The Orange County Transport Authority (OCTA), supported by CalTrans, eventually decided to buy out the private interest and purchased the express lanes in January 2003 for US\$ 207.5 million. This constituted a de facto return of the project to public ownership.

5.2 Toll acceptability and willingness to pay

The problem of social acceptability of toll systems must be examined with care whenever it is proposed to apply tolls on a road section. This applies especially in an urban context. There are, indeed, examples of projects that have ultimately failed due to lack of willingness on the part of users to pay such tolls.

A number of factors are said to determine the social acceptability: [7]

- Level of toll charges: toll levels vary widely and are generally set by reference to socio-economic conditions and project cost components (e.g. construction costs). Toll levels need to be reasonable in the sense that they are consistent with and proportionate to the usefulness gained by the road user. Price elasticity for short distance tolls is usually higher than for longer distance tolls.
- Toll collection method: Whatever technology is applied to collect the tolls, users should clearly recognise the service provided. This is especially important when introducing electronic toll collection. Progressive introduction of the tolling, rather than simultaneous introduction over a complete network, mitigates the risk of jeopardising public support.
- Toll system: a toll system will only be accepted insofar as it is associated with satisfactory benefits for the user.
- Presence of toll-free itineraries: the presence of a toll-free itinerary parallel to the tolled road section has a significant positive impact on social acceptability. People tend to value highly having a choice between distinct service levels.
- Existence of taxes associated with the road sector.

Sometimes the nature of the toll collecting concession-company – state owned or private – can have an impact on toll system acceptability.

5.3 Equity impacts

Urban PPPs applying some form of charging or tolling have a variety of equity impacts. They tend to increase horizontal equity by on the one hand, charging users directly for the roadway costs they impose during peak hours and, on the other, by reducing cross subsidies from motorists who choose not to use the facilities at peak times. Some critics argue that road pricing is tantamount to “double taxation” in that motorists usually already pay other road-related levies such as fuel taxes and vehicle registration fees. In general, however, these levies do not cover the marginal cost of driving in peak urban conditions.

Although large-scale income equity effects are often feared, they have not to date materialised to the extent of discriminating between groups in society in terms of permitting affordable access to road infrastructure. A study by Cal Poly State University aimed at evaluating the impacts of the 91 Express Lanes in California, USA, concludes that: “(...) while toll lane use has continued to vary significantly with income, gender, age and other characteristics, people from all demographic backgrounds make use of the facility” [8]. Motorists from all income groups are generally willing to pay for travel time savings and reliability; their frequency of use is dependent on a wide range of factors besides income, including gender, education and the need or otherwise to commute to work.

There are also means available to subsidise lower income groups in order to overcome eventual affordability problems – for example by granting discounts or even free access to the toll facility.

5.4 Road asset information

In PPP contracts related to maintenance and operation, the responsibility for existing road assets is transferred from the owner to the operator for the duration of the contract. In order to estimate full maintenance and operation costs with a view to preparing a bid, the private partner needs to have detailed, up-to-date information about the condition, location and dimensions of the road assets under consideration. This information is not always readily available, especially from local authorities.

In the case of the Portsmouth PFI, the available road asset information was insufficient for bidders to come up with cost estimates accurate enough to make a proper proposal. Besides being in many respects outdated, the information was not centrally located. Rather it was spread over a number of departments within Portsmouth City Council. Several additional surveys and measurements, therefore, had to be performed in order to fill in the missing data.

5.5 Sufficient competition and deal flow

In order to get competitive bids and value for money for their urban road projects, client authorities need a sufficient number of willing and capable companies or consortia to compete in the bidding process. From a longer-term perspective, they also need to consider whether a competitive market is still likely to be present at the time of re-contracting, after the initial contract period has expired. This is especially valid for long-term maintenance contracts.

Conversely, for the private sector to get involved in these kinds of initiatives there must be continuity in the flow of potential deals. Clearly, there needs to be a prospect of stable revenue flows for companies, in order to enable them to recoup their investment in setting up the dedicated structures needed to handle such projects.

6. CONCLUSIONS

This paper has introduced some of the benefits for urban road projects brought about by adopting a PPP approach to their implementation. The IRF case studies have highlighted that the generally-recognised benefits of public-private partnerships tend to materialise to an even greater extent when applied in the urban context – which is distinctive with respect to road projects because the physical constraints are tight, the public is more aware, road users have higher expectations and the direct economic impacts of road

improvements are greater. PPP contracts appear to be particularly well adapted to this highly demanding environment, as they induce:

- Efficient urban solutions and high level of service, thereby responding to the specific user needs of commuters;
- Continuous attention and funding for urban roads, thereby depoliticising the debate surrounding funding for urban roads and enabling the ongoing maintenance of urban road networks up to quality standards;
- Greater socio-economic benefits that materialise sooner than would otherwise be the case under conventional contracts, and which are accompanied by direct economic impacts that are both proven and tangible;
- Innovation and optimisation, both in design solutions and in terms of integrating projects within their urban environments. The advantages also encompass technological innovation, such as free flowing tolling and innovative pavement techniques.

A number of issues, such as how to contractually embed future developments; social acceptability and public willingness to pay for urban tolls; and the need for sufficient competition, provide interesting subjects for further elaboration.

In short, a PPP approach could offer a much-needed solution to authorities facing the common dilemma of how to solve their urban road capacity problems in a manner that maintains optimum balance between accommodating growing traffic demands, on the one hand, and the need to safeguard our cities as 'liveable' on the other. This applies especially in the current economic climate of fewer tax revenues, and hence reduced budgetary leeway.

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