PRIVATE-PUBLIC PARTNERSHIP INITIATIVES AROUND THE WORLD: LEARNING FROM THE EXPERIENCE

Karisa Ribeiro*†
André Dantas**

Abstract
In New Zealand, there have been signs that Public-Private Partnerships (PPP) may be employed in expanding the roading network in order to meet future developing needs. This paper examines the lessons from international experiences and the potential of PPP initiatives in developing roading projects in New Zealand. Potential issues in the implementation of PPP initiatives are identified in order to contribute to the scientific and technical discussion.

1. Introduction

There has been a growing tendency in involving the private sector to provide high-standard transport infrastructure to meet the needs of rapid economic growth. For many years, the public sector has traditionally financed and operated infrastructure projects using resources from taxes and various levies (e.g. fuel taxes, road user charges). However, the recent disparity between the capacity to generate resources and the demand for new facilities has forced governments to look for new funding methods and sources. Many countries are now contemplating Public Private Partnerships (PPP) as an arrangement between public and private sectors to finance, design, build, operate and maintain public infrastructure, community facilities and related services.

Despite PPP's widely acknowledged benefits, international experiences have shown that there can be many issues affecting the successful implementation of these partnerships. It has been argued that a properly structured PPP can efficiently achieve better results than public sector initiatives. It is often claimed the private sector, with its wide range of managerial, commercial, and technical skills, can reputedly perform certain tasks more efficiently than the government, thereby offering potentially huge benefits to the public (Zhang *et al*., 2001). Despite avowed advantages, recent international PPP experiences have shown that extensive planning actions are required in order to manage the risk of PPP failure (World Bank, 1999; Fisher and Babbar, 1996; Menckhoff and Zegras, 1999; Shaw *et al*., 1996).

In New Zealand, there have been signs that PPP may be employed in expanding the roading network. Land Transport New Zealand, Transit and the Ministry of Transport have demonstrated interest on the theme. Various preliminary reports (Wallis, 2005; MOT, 2002; Transit 2003a; 2003b) have been prepared in order to create knowledge and instigate discussion about PPP policies for funding infrastructure projects. The main focus of these reports has been on: policy development; guidelines for funding; traffic forecast and economic analysis.

This paper contributes to the technical discussion about PPP planning and implementation in New Zealand. A review of recent international experiences is presented in order to identify potential issues, challenges, barriers and lessons that may contribute to developing PPP roading projects in New Zealand. The paper is divided into six sections, namely: Public Private Partnership; PPP programmes around the world; New Zealand Context and PPP issues; Learning from the experiences; and conclusions.

* MWH New Zealand, 7 Deans Avenue PO Box 13249, Christchurch, New Zealand. Tel: +64-3-343-8792 email: karisa.m.ribeiro@mhwglobal.com.
** University of Canterbury, Private Bag 4800, Department of Civil Engineering, Christchurch, New Zealand. Tel +64-3642238 email:,andre.dantas@canterbury.ac.nz,

†The opinions and ideas expressed in this paper are not necessarily those of MWH New Zealand.

2. Public Private Partnership (PPP)

PPP is significantly distinct from traditional design-bid-build contracts. Many fundamental differences can be highlighted as followed:

- a broad range of uncertainties and risks associated with the long-term PPP contract;
- radical realignment of risks, responsibilities, and rewards among multiple project participants;
- the private-sector partner undertakes far more responsibilities and assumes much more and deeper risks than a mere contractor.
- limited resources and off-balance transactions, as well as complicated contractual arrangements between project participants.

Various PPP definitions can be found in the literature (Allan, 1999). The two most commonly used definitions are:

- a cooperative between the public and private sectors, built on the expertise of each partner, that best meets clearly defined public needs through the appropriate allocation of resources, risks and rewards; and / or
- An arrangement between two or more entities that enables them to work cooperatively towards shared or compatible objectives and in which there is some degree of shared authority and responsibility, joint investment of resources, shared risk taking and mutual benefit.

Historically, PPP have been observed since nineteenth century. At that time, railways, canals, roads, and gas, power, and water systems were initially privately owned, operated, and funded. However, over the years, infrastructure companies have been regulated or nationalized, although the pattern has varied substantially across and within countries and sectors. Wars and economic depression gave another boost to nationalization and stronger regulation, which increased in the 1940s and 1950s. Disappointment with the performance of regulated or nationalized firms led again to deregulation and privatization in many countries from the 1970's onward (Klein and Roger, 1994).

In additional, the financial pressure on the private sector resulting from the oil shocks of the 1970's and the economic downturn in 80's that saw them putting pressure on governments to allow them to take over what to be inefficient and protected public sector activities.

PPP have various functions: design; build; finance; operate; maintain; own; transfer; lease; develop; and buy. PPP are also referred as different types of arrangements such as: Build-Operate-Transfer (BOT), although the actual delivery mechanism includes Design-Build-Operate-Maintain (DBOM), Design-Build-Finance-Operate (DBFO), Build-Own-Operate (BOO) and Rehabilitate-Operate-Transfer (ROT) (Menckhoff and Zegras 1999; Zhang 2001).

Depending on the degree of involvement and the type of contract between public and private sectors the level of risk of the project can vary as shown in Figure 1. It is observed that the reduction of public sector involvement corresponds to the increase of risk to the private sector, and *vice versa*.

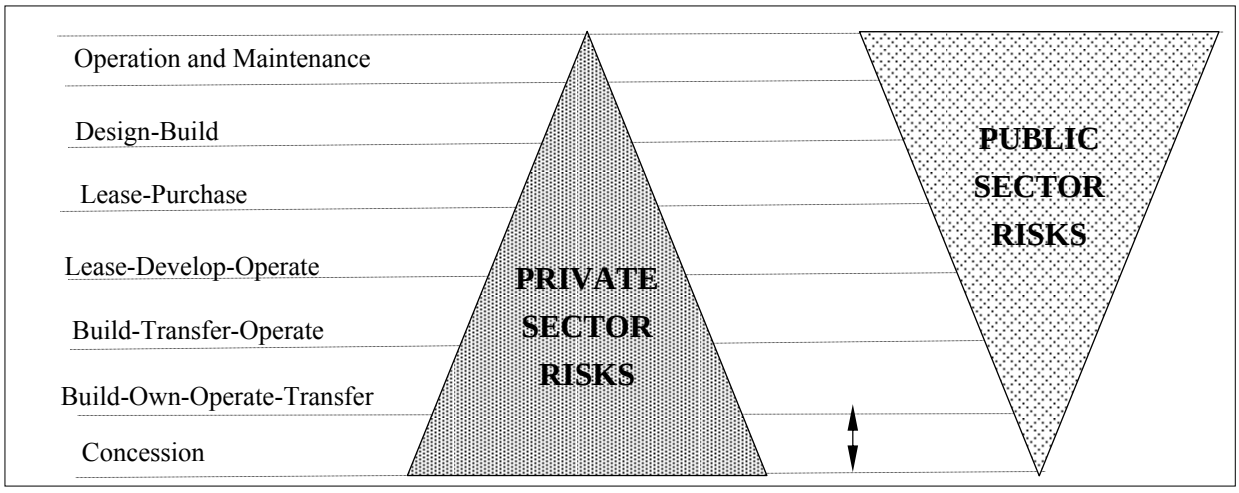

Figure 1 - Risk Degrees in PPP
Source: Adapted from Chege and Rwelamila (2001) and Guislain and Kerf (1995)

Various researches have been conducted in order to foresee and / or diminish issues in PPP Programmes. For example, the World Bank (1999) and Shaw *et al*. (1996) have identified the following key issues to implement PPP programmes:

(1) **Planning and institutional issues;**
(2) **Legal and regulatory framework;**
(3) **Types of contracts**;
(4) **Government Support**;
(5) **Traffic Forecasting**;
(6) **Setting and adjusting toll rates;**
(7) **Financing structure and sources**;
(8) **Public acceptance; and**
(9) **Role of donor agencies.**

It is argued that these elements can contribute to establishing a prosperous PPP environment. It is important that government and private sectors know their role, benefits, investments, risks, guarantees, etc when participating in a PPP programme.

3. PPP programmes around the world

Different types of PPP have been put in practice in worldwide infrastructure development. Limited financial resources available to the public sector for financing infrastructure development have prompted countries in Asia, Africa, Europe and North, Central and South America to use private investment as a promising alternative. According to World Bank (2002), there have been 662 transport projects with private participation these process have attracted US$135 billion in investment during 1990 to 2001. Various lessons can be taken from these PPP initiatives (World Bank, 1999; World Bank, 2002; Harris, 2003). Table 1 summarizes a selected number of main international PPP experiences and their main issues.

Table 1 – Summary of international PPP experiences

COUNTRY	PROGRAMME FEATURES	MAJOR ISSUES
Argentina	The toll road concession program transferred to private operators one-third of the intercity road system and the vast majority of the access roads to Buenos Aires.	-complex bidding criteria and rules for contract renegotiations; -term of concession periods; negative public response; -the need for a well-defined legal and regulatory regime; and -the importance of institutions.
Australia	The Australian contractual framework is based on the Build-Own-Operate-Transfer (BOOT) model assuming ownership is defined as a lease.	-essential for government involvement in the comprehensive planning of the project; -how the project fits within the overall road network and the transportation system; -in urban areas, planning has to provide for growth and change while creating sustainable, efficient, and equitable cities and regions; -some unique features of the roads industry produce some difficulties for private sector involvement.
Brazil:	Over 850 km transferred to private sector, which is expected to invest over US$1.1 billion in the next 25 years.	-the role of multilateral development banks, particularly in providing long-term financing; -the use of cross-subsidies to fund unprofitable toll roads; use of relatively low toll rates to foster public acceptance; and -vulnerability to economic crisis.
Chile:	Enacted a law allowing for the award of concessions for the construction, maintenance, and operation of toll roads, tunnels, and related infrastructure under BOT schemes, which intend to attract U$4 billion from 1997 to 2000.	-provision of new/upgrade road infrastructure at the lowest possible costs and greatest efficiency; -transparent and competitive bidding procedures, with the terms of the contract clear and equal for all participants, leaving as little as possible to future negotiations; -the government prepared basic information to support the PPP process; -attempted to keep tolls at levels that users are willing to pay; and -reducing construction risk, with the government giving bidders reference designs.
Colombia	Called for about US$1.2 billion in private investment for the 1995-1998 period in order to rehabilitate 1,080 km and construction of 250 km of new road.	-use of a private-public sector partnership to bring additional resources to the project and increase efficiency; use of competitive bidding to minimize governmental support and residual risk; -need to base project revenues on affordable toll rates; -benefits of providing an up-front capital contribution rather than an operational subsidy; -benefits of including existing tolled facilities in the concession package; -need to allow concessionaires to take a position in the project's future upside revenue; -importance of quality project preparation; and helpful role played by an international development bank, such as The World Bank.
China	With an estimation of over 70 percent increase in traffic forecasts in the 1994-2000, construction of 130,000 km of new roads and investment over US$150 billion China has been laying the foundation for substantial and long-lasting private sector participation. Although there remains a substantial shortfall in the financing available for implementation.	-leveraging of existing highway assets to raise new funds in capital markets; need for a legal and regulatory environment conducive to private financing for new toll highways; -need for adequate institutional capacity and compensation for land acquisition and resettlement; -creditworthiness and commitments from public entities; -need for flexible forms of project companies in order to facilitate foreign investment; and -need for transparent contracting procedures.

Table 1 – Summary of international PPP experiences (continued)

COUNTRY	PROGRAMME FEATURES	MAJOR ISSUES
France	The development of high-performance roads may be divided into four phases. In the first phase, from 1955-69, a commitment to the use of tolls for financing motorway construction by public companies was made. The second phase, one of liberalization and privatization, lasted from 1969 to 1981. The third phase, from 1982 to 1993, involved crisis management through a state takeover and a national system of cross-subsidies.	- relative advantages and disadvantages of motorway financing through cross subsidies; - relative advantages and disadvantages of toll financing of highways; efficiency of private concessions for highways; - dilemma of regulating toll rates of concessionaires; - importance of guarding against potential conflicts of interest when construction companies participate in concessions; and - relative ability of public and private sector companies to take environmental considerations into account.
Hong Kong	Despite a lack of public funding, motives for introducing BOT were not the primary concern. Main motivations were: introduce innovative technology; build up needed infrastructure more rapidly than would have been possible using conventional methods; build and operate infrastructure in a more efficient manner than it was thought that the public sector alone would be able to do; and retain public funds for needs that might arise after Hong Kong reverted to the People's Republic of China.;	– identification of BOT projects based on a long-term plan; and clear risk-sharing based legislative ordinances enacted for each project; - transparent tendering and selection procedures; - independent monitoring of the tender process; - the importance of allowing the private sector maximum flexibility in route selection and design, addressing revenue risks through firm and fair toll adjustment mechanisms; - concession expiration and "re-bidding"; maintaining the flexibility to utilize such tools as development rights to supplement project economics; and - the importance of using experienced contractors for technologically sophisticated projects.
Hungary:	Initially developed a toll motorway network on a BOT basis, which called for the development of four motorway corridors.	- need for reliable traffic forecasts; importance of public acceptance; importance of well-drafted concession laws; appropriateness of government contributions of rights-of-way; potential conflicts of interest in contractor-driven projects; role of multilateral bank support; and transition toward PPP;
Italy:	A toll motorway has been developed through granting concessions, almost entirely to companies controlled by public bodies. In 1993, there were about 28 toll motorway concessionaires, with 27 of these being semi-public companies.	- the creation of a financially strong toll road operator; the importance of winning public acceptance for toll increases; - the limited use of direct government subsidies; - the use of special accounts to provide financial support for financially weak concessionaires; and - the use of a price-cap scheme for toll increases;
United Kingdom:	Due to legal restrictions and strong public resistance, direct assessment of tolls has only been used for very short road links, such as bridges and tunnels through Design-Build-Finance-Operate(DBFO) mechanism. The concessionaire typically provides the facility and the services to the Government in return for "shadow tolls" that are based on highway usage and the availability of the facility.	- appropriate sharing of revenue risks; the compatibility between appropriate profit levels and effective incentives for the private sector; the appropriate scope and procedures for government review of private sector projects; - the monitoring of project activities through a public inquiry and/or independent committee process; - the importance of using an experienced contractor; and innovative financing in a mature financial environment.

4. New Zealand context and PPP issues

Historically, investment in the New Zealand transport system has been heavily dependent on government funding. Recently, however, it has been argued that investment through the National Land Transport Fund (NLTF) and territorial authorities is insufficient to address changes in transport demand and the strategic needs of New Zealand. Hence, there have been signs that PPP may be employed in expanding the roading network in order to meet future developing needs.

Governmental agencies such as Ministry of Transport, Land Transport New Zealand (LTNZ) and Transit New Zealand have demonstrated interested on the theme. These agencies have prepared reports in order to create knowledge on how they can benefit from private investments. A few initiates have already been taken towards the PPP direction

In 2002, the Ministry of Transport established the Land Transport Management Bill, which represented the biggest legislative change since the late 1980's. The Bill provides for a balanced and flexible funding framework for land transport. The Bill places a number of conditions on PPP, including:

- Partnership arrangements are limited to 35 years or less;
- Land transport infrastructure remains in public ownership;
- Initial acquisition of land, and designation of land for roading, remains with the public sector;
- The public sector is not liable to compensate any party if traffic numbers are below forecast for the life of the project;
- The project has a high degree of support from affected communities;
- The final proposal needs ministerial approval; and
- PPP will usually, but not always, involve tolls. The Bill provides a generic framework for tolling projects, which until now have required a separate piece of legislation for each project.

Under the Bill, Transit New Zealand has developed two major reports: *Alternative Methods of Funding Future State Highway Projects and Finance*; and *Toll projects-Implementation Guide*. These provide guidance in implementing alternatively funded State Highway projects using PPP (concession) agreements. The reports describe a step-by-step process in the implementation of candidate projects through an alternative funding method (Transit NZ, 2003a; 2003b).

More recently, a LTNZ funded research report examined the implications of road tolling policies in New Zealand (Wallis, 2005). Despite its focus only on public financed toll roads, this report's results and principles are applicable to PPP schemes. The report identified main areas of deficiency in tolling road specially the assumptions using to modelling the traffic and economic evaluation.

5. Learning from the experiences

The examination of all international experiences shows that PPP has to be carefully applied. Success and failure of these partnerships have shown that one of the main issues associated with PPP are the assumptions and estimations conducted during the planning process. Clearly they may reflect on the risk of PPP programme. Amongst them, the following can be highlighted:

- Variations in exchange rate;
- Expected growth in traffic demand;

- Political tensions and changes in policies; and
- Renegotiations of contracts.

PPP projects in Southeast Asia, Malaysia, Indonesia, and Thailand, have failed mainly because of the high risk and fewer guaranties on the investment return. In these countries, public agencies have inaccurately estimated costs and traffic forecasts, which resulted in lack of private investor in tendering process. Inability to assess local conditions and the lack of confidence to guarantee the long-term investment return has created huge problems for those countries.

On the other hand, the United Kingdom, France, Colombia and Brazil experiences draw attention to three main critical aspects on the planning and implementation of PPP's. Firstly, it is important to have **simple and transparent criteria** for the projects. Secondly, the **rules for renegotiating contracts** should be spelled out **as early and as clearly as possible**. The third aspect is the whole **planning and implementation process** of PPP projects. The planning, design, maintenance, and construction phases are the responsibility of the government, but the investment comes from the private section. It is crucial that the public sector realizes its role and the importance of strategic actions in order to offer a reliable and safe service to users.

Therefore, if the New Zealand government decides to move forward with the introduction of PPP schemes, two main principles would be recommended:

> **1- To establish a long-term planning process of PPP, which are likely to attract private companies; and**
>
> **2- To select PPP projects which are in accordance to LTNZ's mission / goals.**

Principle 1 would contribute to attracting the private sectors, because it would indicate stability in actions and commitment to minimize risk levels to project participants. Consequently, private companies would have strong business cases and long-term investment returns. On the other hand, **Principle 2** highlights that the selection of transport infrastructure projects should be carefully analysed to avoid various pitfalls that have plagued PPP schemes all over the globe. Specifically, serious consideration should be given to selecting projects that would actually contribute to achieve "*an integrated, safe, responsive and sustainable land transport system*".

Considering the current state of PPP in New Zealand, it is critical to examine why no roading infrastructure project has actually been implemented, despite the existence of legal provisions as described in Section 4. The main reason would be that PPP implementation attempts were not part of a strategic planning process as observed in many other countries. For example, many have advocated that the Transmission Gully Project would be a strong candidate for a PPP. However, it can be argued that the Transmission Gully project was not presented as part of a long-term strategic planning process but as an isolated project. This has contributed to increasing the risk levels of the project and consequently it has deterred the participation of the private sector. Another contributing factor would be that travel demand forecasts indicated that the investments would not be recovered within the planning horizon, hence private investors have demonstrated limited interest in participating in such a project.

Experiences such as the Transmission Gully project have been used to demonstrate that PPP is not viable in a small population-low density country like New Zealand. Indeed, the particular characteristics of this country make the implementation of PPP projects a considerable

challenge. Nevertheless, international experiences show that the country's characteristics do not affect PPP's success as much as the structure of programme does. Therefore, to address these issues, it is critical to face PPP as a process rather than the solution to a specific and isolated problem.

Although it is acknowledged the need for a well-structured PPP process, financial attractiveness is another factor that has to be addressed. This could be achieved by taking advantage of part of the roading network with high demand. An obvious opportunity would be the Auckland Metropolitan region. Once potential PPP roading projects were identified and implemented with private sector funding, the public sector would be released to re-allocate the available financial resources to areas in need for infrastructure investment.

6. Conclusions

This paper reviewed worldwide experiences and examined the potential and issues that may be faced in adopting PPP in New Zealand. Previous experiences show that there is significant potential in attracting investment from the private sector, but successful PPP profoundly depends on planning actions prior to implementation. A key lesson to New Zealand would be that PPP should be carefully planned and presented based upon simple, transparent and strategic principles.

In this sense, there is a growing realization that further research is needed in order to develop tools and methods that could accurately analyse the complex reality of PPP projects. Building from the principles enunciated in Section 5, there would be a need for methods and tools that could specifically support the analysis and evaluation of PPP projects. Traditionally, the assessment of transport projects has mostly been based on economic appraisal as in the LTNZ Project Evaluation Manual, which mainly considers travel costs and the revenues of direct investments and maximizing the net benefits in resource terms (Willis *et al*., 1998; Lee, 2000).

Nevertheless, PPP environment requires the analysis of not only operational but also social, political and economical criteria. These criteria play a major role to achieve success of any PPP project (Dantas *et al.* 2006). The World Bank (1999) reports that factors such as land use, population and economical growth surrounding the asset influence directly and indirectly the structure of the PPP project. Therefore, the use of cost benefits analysis should be applied as one of many steps to evaluate PPP project but not the only one. Thus, the availability of PPP-oriented methods and tools would contribute to other key areas such as financial, risk and law issues. They would contribute to produce more realistic assumptions and estimates to cost benefit analysis and consequently to decrease the risk and increase the changes of financial success of the PPP projects.

Acknowledgements

The authors want to express their gratitude to Transit NZ staff for providing access to documentation that contributed to this paper. Also, we would like to thank the comments received from our anonymous peer reviewers and from Dr. Alan Nicholson.

References

Allan, J. R. (1999) *Public –Private Partnerships: A Review of Literature and Practice.* Saskatchewan Institute of Public Policy, Public Policy paper n.4.

Chege, L., Rwelamila, P.D. (2001) *Private Financing of Construction Projects and Procurement Systems: An integrated Approach.* CIB World Building Congress. Wellington, New Zealand.

Dantas, A. Ribeiro, K. (2006) *Assessing Spatial-Temporal Impacts of a Transport Infrastructure Policy in Brazil*. 85th Transportation Research Board Annual Meeting; Washington, DC, USA.

Fisher, G., Babbar, S. (1996) *Private Financing of Toll Roads.* RMC Discussion paper series 117. World Bank. Washington DC.

Guislain, P., Kerf, M. (1995) *Concessions- The way to Privatize Infrastructure Sector Monopolies*. Private Sector note n. 59.

Harris, C. (2003) *Private Participation in Infrastructure in Developing Countries. Trends, impacts and Policy Lessons*. World Bank, Washington, D.C.

Klein, M., Roger, N. (1994) *Back to the future- The potential in infrastructure privatization*. World bank, Private Sector no: 30.

Menckhoff G, Zegras C. (1999) *Experiences and issues in urban transport infrastructure concessions*. Proceeding of International Road Federation (IRF) Symposium. Hanoi, Vietnam.

MOT- Ministry of Transport (2002) *Land Transport Management Bill*. Ministry of Transport, Wellington, New Zealand.

Shaw, N., Kenneth, M. G. and Lou, T. (1996) *Concessions in Transport*. TWU-27, TWUTD, World Bank, Washington, USA.

Transit NZ (2003a) *Alternative methods of funding future State Highway projects*. Draft Report.

Transit NZ (2003b) *Finance and toll projects- Implementation Guide*. Draft Report, Wellington, New Zealand.

Wallis, I. (2005) *Implications of selected urban road tolling policies for New Zealand*. Land Transport New Zealand Research Report no. 270; New Zealand.

Willis, K. G., G. D. G. and H. D. R. (1998) *A Review of Cost- Benefit Analysis as Applied to the Evaluation of New Road Proposals in the U.K*. Transportation Research, vol. 3, n.3, pp. 141-156.

World Bank (1999) *Asian Toll Road Development Program. Review of recent toll road experience in selected countries and preliminary tool kit for toll road development*. World Bank and Ministry of Construction of Japan Draft Final Report. Washington, DC.

Zhang, X. Q., K. M. M. (2001) *Procurement Protocols for Public Private Partnered Projects*. Journal of construction Engineering and management, ASCE, vol. 127, n. 5, pp 351-358.

World Bank (2002) *Private participation in Infrastructure: Trends in developing countries in 1990-2001*. World Bank, Washington, USA.