

# CHALLENGES AND ISSUES IN PPP CONTRACTS

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## ABSTRACT

The recent trend in the lack of funding for capital investment projects has been a common problem for many road authorities. Most road authorities are lacking a road fund or earmarked funds and are dependent upon the typical year to year budget fluctuations. This is especially true for construction of large road projects. In Finland, The Finnish Road Administration (Finnra) has tendered the E-18 Muurla – Lohja road project using the Public Private Partnerships (PPP) model.

The use of the PPP model effectively means the "Design-Build Finance Operate - DBFO" approach and this is the terminology used in this text when referring to PPP. Finnra has typically procured capital investment projects via traditional methods and more recently the Design-Build model, which has become the preferred model of choice in Finland. However, due to limitations in budget financing and the need to construct additional roads, it is not possible because of the lack of public finances. This has led Finnra to investigate and study some of the new developments with the PPP model in several countries. Recently, the Finnish Road Administration (Finnra) has partnered with the Delft University in Holland to perform an international study, which partially includes the evaluation, performance, and lessons learned from PPP type projects. This joint study includes the practices of over 10 different countries.

Some of the essential issues, such as, private financing, risk sharing and allocation, tendering arrangements, newer payment mechanisms, seeking to address road user concerns and customer services, are very important aspect of the PPP model. The aim of this paper is to share some of the "real and practical" issues and concerns that affect tendering and contracting aspects. These issues include payment mechanisms, tendering issues, advantages and disadvantages, potential pitfalls, and the choices when considering the use of the PPP model.

The method used to reinforce such ideas and practices are derived from much literature research, information from the feasibility study, and most importantly by interviews with knowledgeable experts that have actually participated in PPP type projects and research. This method also includes the authors own history of researching, interviews, and expertise.

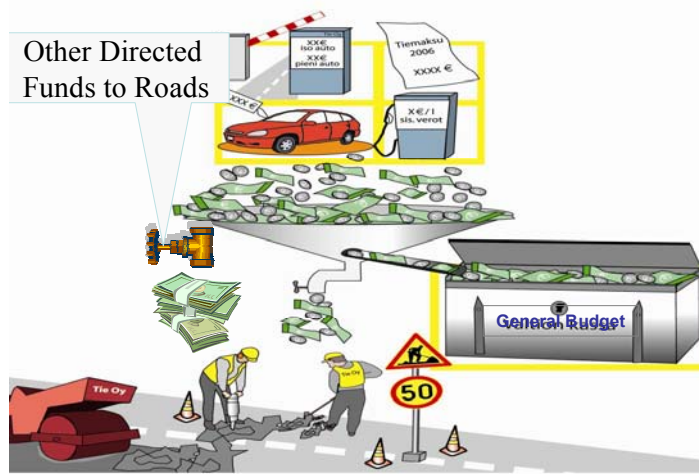
Some of the results from the study will be discussed and presented. Concluding remarks thoroughly evaluate and study the PPP model so that it maybe a potential successful delivery model. Each country needs to independently decide whether the PPP model is appropriate for their culture and environment.

# 1. INTRODUCTION

One main issue that continues to hamper many road authorities is the lack of funding for capital investment projects as many are still dependent upon the typical year to year budget fluctuations. Many countries around the world are striving to answer the challenges in constructing and maintaining the transport infrastructure, which is an important side-benefit for effective transport. Recent global trends has seen the falloff in the construction of new road infrastructure projects and many are trying to seek alternatives in order to meet road user demands. The decision makers have decided to invest in political issues that are more humanly understood, such as health care and other social agendas. Figure 1 shows a visual form of how the issue can be understood more plainly, as taxes are collected form the users in some fashion, but only a minor percent is returned back to the take care of the road infrastructure.

In the past, the Finnish Road Administration (Finnra) has procured capital investment projects mainly via traditional methods (Design-Bid-Build) and via the Design-Build model (some refer as Design & Construct). Also Finnra has completed one motorway project via the PPP model (also termed as Public Private Partnerships), which was called the “*Jarvenpaa-Lahti Motorway (E-75)*”. Recently, the federal budget funding limitations has caused a falloff in the construction of new road infrastructure projects. Hence, Finnra has re-investigated this PPP (called Public Private Partnerships) project delivery method and tendered a new PPP project called the Muurla-Lohja motorway (E-18), which is part of the Nordic E-18 network. From this point on, the terms “*Design-Build Finance Operate*” (DBFO) and PPP will be used interchangeably and are intended to mean the same method for this report.

However, the use of PPP in various project applications seems to create strong debate and strong criticism in many countries. In Finland this is no exception, and there are many concerns and criticisms. Some feel that public financing is more appropriate as the interest rates of most well favored countries are lower than the private sector. Often the argument is raised that in some countries where the credit-worthiness of the state is very high (for instance, Finland which has a triple A rating), interest rates for the Ministry of Finance for loans at the capital market are lower than for private construction firms or consortiums. This argument is flawed to the extent that the state can be a reliable lender since it always has the opportunity to pass on risks and higher costs to the tax-payer.



Source: Juha Tervonen

Figure 1 - The Funding Scheme

## 1.1 Background information of Finnra

The Finnish Road Administration (Finnra) is a governmental agency under the Ministry of Transport and Communications, which is responsible for public road management in Finland. Finnra is responsible for about 78000 kilometers of public roads. This consists mainly of main roads, rural roads, local roads, pedestrian and bicycle ways, and a small amount of motorways. About one-third of the network still consists of gravel roads, which presents concerns during the freeze thaw cycles. (It should also be noted that prior to 2001, the organization was called the Finnish National Road Administration).

Finnra is more like a client type organization that has no production capability to perform maintenance, construction, upkeep and improvements, and design/engineering services. Finnra's core activities are concentrated on road policy, strategies, safety, traffic management, road programs, procurement of all related capital investment schemes, and procurement of all periodic and routine maintenance.

The first PPP project in Finland was called the "*Jarvenpaa-Lahti Motorway*" and used a shadow toll type payment mechanism system as the form of payment to the winning concessionaire. As previously mentioned, the second project called Muurla-Lohja E-18 PPP project was recently tendered and is presently under construction and utilized the "Availability Payment Mechanism".

Back in 2001, Finnra decided to research some of the most innovative and progressive countries throughout the world, and evaluate some of the best practices and development issues. A report titled "*Innovative Project Delivery Methods For Infrastructure - An International Perspective*" [1] was generated that summarizes the results of the study. This study provided the framework for seeking new innovative project delivery methods. Shortly afterwards, Finnra also developed a procurement strategy titled "*Procurement Strategy of the Finnish Road Administration (Finnra)*" [2], which was approved in the spring of 2003. Also, around the same period, Finnra performed a feasibility study titled "*(Life Cycle Model)*" (3), which studied the practical issues involved in the procurement of large capital investment projects via the term "Life Cycle Model". Effectively, this means the use of the "*Design-Build Finance Operate (DBFO)*" project delivery method for large road projects in Finland. This has initiated the foundation and framework for pursuing the PPP model.

Some of the common characteristics from the studies revealed that project delivery methods for infrastructure appear to be shifting toward longer contract duration, a broader and more inclusive content of services, shifting responsibility for quality aspects toward the service providers, and seeking better customer services for the real customer - the road user. At the same time this has meant a change in the role of the client organization by procuring services previously procured via separate contracts. On the basis of international experiences gained so far, cooperation and partnering have also enabled the realization of the "win-win principle", meaning that both the clients and service providers have benefited.

Results from the first PPP were highly successful demonstrating a reliable and safe road that is pleasing to the road users. It was also noted that the service provider and the public have both gained from this project.

## 1.2 Goals and drivers

There are several reasons for the interest and acceptability of PPP model and some of the main drivers or reasons are as follows:

- Value for money
- Increasing the pace of infrastructure delivery
- Complete important projects faster than traditional methods (congestion issues too)
- No disruption of other projects in portfolio package
- Optimization of risk transfer (Risks on the party able to influence & best manage)
- Seeking whole life solutions or Life Cycle Cost (LCC)
- Seeking innovation and better quality (more durable & longer lasting)
- Off-balance sheet (not considered as a public debt)
- More recently - the lack of public funding available

In Finland, the main drivers for testing the PPP concept are because large road projects can be constructed faster as compared to traditional methods, hopefully there will be better quality and innovation potential, costs savings over a long-term (LCC), and testing a newer version of the PPP model as part of the procurement strategy. These drivers or motivations are quite different from country to country and appears that the cultural differences seem to be the most common.

The goal of this paper is to provide some guidance and share some practical issues for those who are interested in pursuing PPP type projects. It is important to understand many of the intricate features when using the PPP model, prior to undertaking a project.

## 1.3 Background information on DBFO and PPP

Some refer to Design-Build-Finance-Operate (DBFO) model as the Public-Private Partnerships (PPP), but there are wide variety of definitions, forms, and variations of Public-Private Partnerships. However, in this report, PPP will be used synonymously as the Design-Build-Finance-Operate (DBFO) model. The following definition is one definition that is used in this paper. PPP can be defined as an arrangement that brings together the "Public Sector" and "Private Sector" in a long-term relationship or partnership, for the benefit of both parties, stressing the long-term aspects and benefits to both parties.

PPP had been previously used in some countries for over a hundred years, and varies in its usage from country to country. This model is a project delivery method that integrates the Design, Construction, Maintenance and Operations, and private sector financing for a given project. The duration of the contract varies which was typically 15-20 years, and only recently has been extended to 30 years or more. Typically in PPP projects there no payments from the client until the road is completed and acceptable for satisfactory usage. When the road is approved for public use, then the agreed payment scheme commences according to those specified in the contract.

Many countries are striving to respond to the challenges in constructing and maintaining the transport infrastructure, which are important part of mobility to society. Recently, the lack of funding for capital investment projects has been a common concern for many road authorities and most are lacking a road fund or earmarked funds. Road authorities are dependent upon the typical year to year budget allocations and approval processes for new capital investment projects. This is especially true for construction of large road projects and PPP is attracting the attention of many road authorities and more countries

are now using the PPP model or are testing the feasibility of the model. Table 1 shows the status of some PPP projects that have been completed or are underway in the selected countries for this study.

PPP projects vary with each country and England has tendered more PPP road projects than any other country. England has used the PPP model for over 600 different types of projects with successes as well as some problematic experiences.

#### 1.4 Methodology

The method used to reinforce the results are derived from an extensive literature search, past studies related to the PPP topic, a questionnaire that was completed by the experts from their respective countries, and more importantly - personal meetings with the experts from these countries included in the study

## 2. KEY ISSUES AND CHALLENGES

The following summary describes some of the key issues, practices, concerns, benefits, choices, and some essential elements that are of great importance in the PPP process.

### 2.1 Feasibility of PPP

Despite the successes in one country, it does not necessarily mean that PPP can be successfully implemented in all countries. Due to the differing cultural reference points each country needs to decide whether the PPP model is appropriate for projects in their country. A research study on PPP would certainly be helpful and assist a great deal in the development stage. It would be a wise decision to thoroughly evaluate and conscientiously study all aspects of the PPP model before using for any proposed projects. There are so many dynamics in procuring a project over a long-term period and it requires much research, wisdom, and is a learning process for the client as well as the service providers.

### 2.2 Understanding Design-Build as root of PPP

Also, it is very important to understand the concept of Design-Build which is the main root of PPP. PPP basically includes design, construction, maintenance, any operations, and private financing for a long duration, which is for about 30 years. If Design-Build has not been practiced then it would be very difficult to move from the traditional procurement process straight into PPP. In other words, it is strongly recommended that one has some knowledge and experience of the Design-Build model and the required team building and risk sharing practices, before proceeding to the PPP model. These and other issues may have a significant effect on whether PPP will produce the highly publicized benefits in some countries. However, it is possible to move directly from the traditional model into PPP and some countries have done this, but the results may not be as beneficial had the lessons learned from Design-Build been implemented.

The illustration in Figure 2 shows the project delivery methods typically used for road projects and also shows the stages of progression. Usually, it requires some form of development, research, studies, experience and etc. before moving to the next progressive model. It is easy to visually see and understand that it is quite difficult to move directly from the traditional model directly to the DBFO model. The experience of testing and implementation of any models in between can be considered as a learning process and one should deliberately proceed with caution. This will help alleviate any possible difficulties and lack of experience when the PPP model is considered and attempted. Any

valuable experiences learned from those other models will make adaptation of PPP quicker and more beneficial.

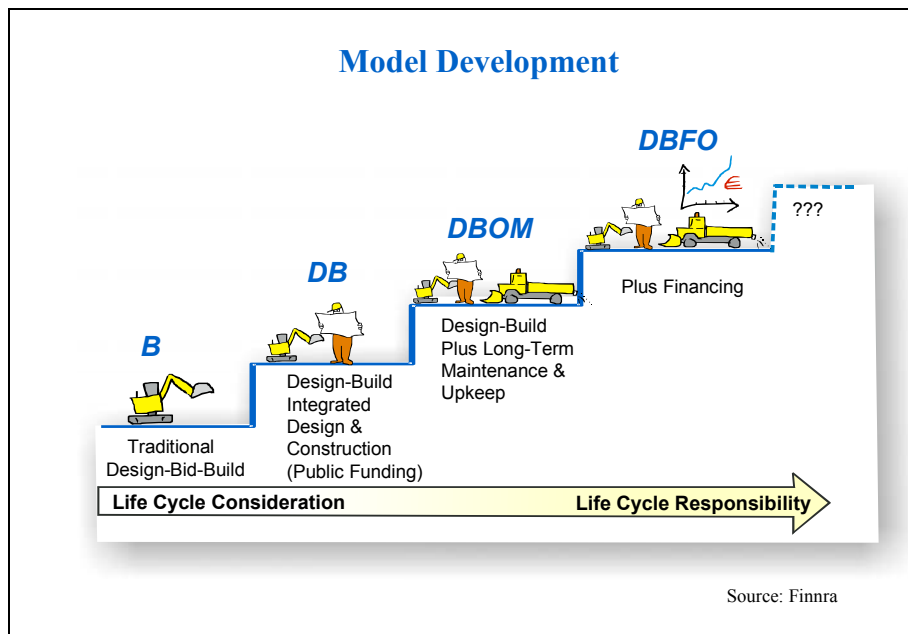


Figure 2 - Model Development of PPP (A deliberate process)

### 2.3 Maintenance outsourcing as a pre-requisite

Additionally, it would be very difficult to describe many of the maintenance related requirements portion of a 30 year PPP contract, if one has never outsourced maintenance in the past or had any experience in specifying maintenance contracts. In practice it is very difficult to determine the maintenance outcome type criteria, service levels, risks and many more aspects if they have never been done in the past contracts. If contract by maintenance has been a common practice then it would have been much easier to use existing maintenance contracts and translate those maintenance requirements into a PPP agreement.

Since PPP involves private finance many aspects of private finance need to be considered before undertaking PPP projects. For example there needs to be legal verification that private finance can be used.

### 2.4 Drivers for PPP

It is important to understand some of the drivers for PPP projects and why this is attracting attention for many road authorities. As mentioned earlier and probably the most common reason is the lack of public funding for road projects, which should not be the main driver, but has become one by default even though this was not the intent of the PPP model.

Originally the PPP model was developed in the late 1700s and early 1800s when there were few roads, rail transport was developing, and harbors and ports were being constructed. The PPP model was intended to increase the pace of infrastructure delivery via private financing as well as public financing. That was the beauty of the PPP model and was intended to quickly develop the infrastructure when none existed or if there was a need for expansion of infrastructure. A systematic input of both public and private

investment could build the infrastructure at a rapid pace to achieve economic viability. Today's situation is quite different and expansion to meet the urban congestion may be an important part for using the PPP model.

The efficiency of the PPP model is another reason why many countries are trying to use PPP and efficiency can be understood in several ways. First the efficiency should result in "Value for Money" (VfM) and the ability to complete projects faster than traditional methods. In addition, there should be the incentive to utilize innovations and better quality (more durability) by seeking after whole life solutions or "Life Cycle Cost" (LCC). Hopefully this will be the outcome from successful PPP projects.

Off-balance sheet (not considered as a public debt) was previously considered as a driver or incentive to use PPP, but the new European Union (EU) rules have changed the ruling of what is considered off balance sheet. This is not a significant driver anymore.

Another driver was to pass through risks from the public sector to the private sector as the government (eventually the tax payers) carried the risks in traditional projects. Risk should be allocated to the party that is best able to influence and manage and in PPP projects the risks are an essential part of the process. Risks may include passing construction, design, and financial risks to the service provider. The more experience in risk management, then it becomes an issue to optimize the risk as one could pay too much for risks that were never realized. Some have developed sophisticated risk analysis and matrixes, which can assist in determining VfM and the tradeoffs between risks. If there is not enough know-how or experts dealing with these risks, then it may be wise to hire advisors to the client.

One additional issue that is not so apparent is the fact that PPP will not disrupt other projects in client's portfolio package of normal budgetary allocations. This means that the other capital investment projects via traditional budgetary allocation may not be affected as this is typically a separate line item within the budget.

Another side benefit is that it helps create a national learning process of PPP and assists the promotion of international competitiveness. This has been demonstrated by the presence of many consultants, legal advisors, financial advisors, and other types of consultants, which are typically coming from England or Europe. Even financial lenders from Australia are entering the market as location is not the determining factor.

## 2.5 Private financing & payment mechanism

Since PPP involves private finance there are many aspects of private finance that need to be considered. For example there needs to be legal verification that private finance can be used. Some countries have required some type of legal approval or authorization for private finance.

The payment mechanism is an essential part of the private finance component when private finance is involved and in practice means that loans will be required from the private sector as well as large infrastructure banks, or possibly the European Investment Bank (EIB). Since the payment mechanism is the main method to recoup expenses, overheads, Return on Investment (ROI), and profits, it should favor the least amount of risks to capture the most favored interest rate. It should be understood that these financial sources and banks do not accept many risks. Also, the project risks effect the financial rating too.

The concessionaire or "DBFO Company" that wins the contract award needs to obtain private financing from other private sector partners and financial institutions. Even a small

fraction of a percentage rate has a significant impact on the Value for Money (VfM) or costs over the life of the concession. Also, the financial ratings in a country can determine the rates at which the borrowing risks are determined. These can have a great impact and sometimes can determine who will provide the best VfM and eventually lowest Net Present Value (NPV).

It is important to determine if there are any market-based or non-market risks. The main point is to reduce or minimize the greatest potential risks in order to achieve the overall best for any project. It is wise to consider the greatest risks first, and the lesson to be learned is that market and financial may be more important than technical and construction risks. One simple choice could be to reduce market based risks altogether, and choose the availability payment mechanism.

If tolls are used then they are considered as a market-based risk and can incur higher interest rates, if the risks to the financial partners cannot be minimized. Shadow tolls were used in earlier PPP contracts and the risks were capped based upon "the bands" in the shadow toll calculations. Recently the "availability payment mechanism" seems to be the favored mechanism as it incurs less risk. In other words the "Availability Payment Mechanism" has significantly more favorable financial impacts as opposed to toll roads. Toll roads are difficult to forecast the actual usage and thus affect the overall VfM. The main types of payment mechanism are as follows:

- Availability payments
- Shadow tolls
- Real tolls (heavy vehicles tolls or all vehicles - results in market-based risks)
- Performance based payments

Therefore it is important to consider choosing market type risks versus non-market type risks and how they affect the VfM. On the other hand is it important to find a funding stream to pay back for the investment and is a difficult decision as the asset needs to be paid whether it is by the road users or via public funds. Fortunately, there are financial advisors to assist the client when needed to evaluate the best situation for each country as most road authorities do not have all the expertise.

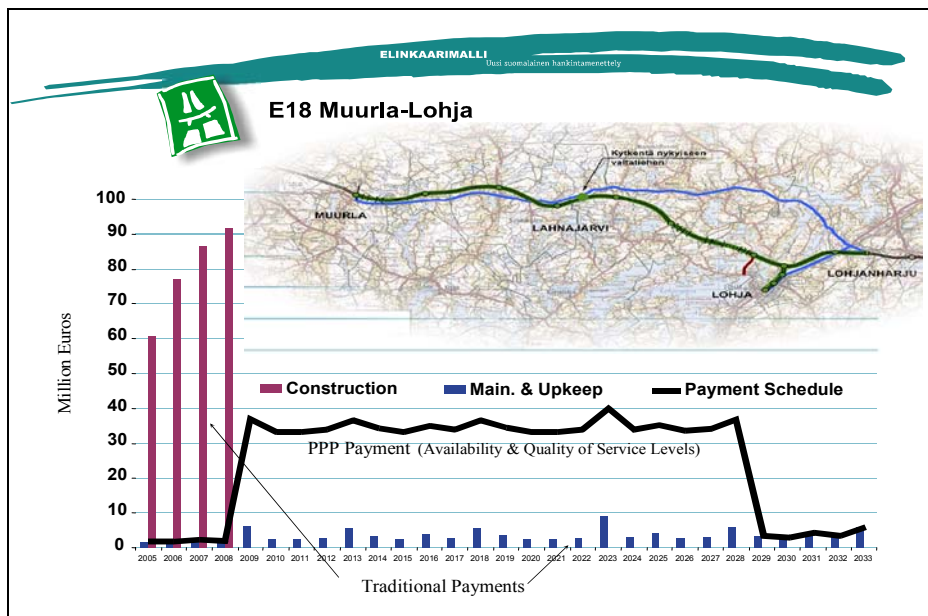
One strong criticism by many contractors is the difficulty to find strong financial partners and packages. Many medium and even some larger contractors may qualify for the best financial packages, while often very large/global contractors have good financial partners. Most of the smaller contractors are able to become sub-contractors to the winning contractor if desired, but this is not necessarily the preferred choice.

As an example of the availability payment mechanism, Figure 3 compares a traditional payment scheme to the availability payment for the recently tendered E-18 PPP project in Finland. The figure attempts to show the difference between the payments in a traditional project versus that from a typical availability payment scheme. In a traditional project, the client or government would be responsible for the capital costs of the project during the construction phase, plus all maintenance costs throughout the life of the project. This can be seen by large vertical bars on the left side of the figure (year 2005 to 2009) which represents the capital payments. The smaller vertical bars (shown by the traditional payments arrows - years 2010 to 2030) show the maintenance costs.

In a PPP project the payment begins after the project is completely constructed and approved. The payments start and remain relatively horizontal across the contract duration



depending upon the quality of service and availability to the road users (shown by the PPP payment text around the 35 level). The PPP payments begin from the year 2009 (proposed completion date) through to 2029, when the contract period ends.



Source: Finnra (2003)

Figure 3 - Finland E-18 Availability Payment Mechanism

## 2.6 Development and tendering issues

Some countries have established or created a PPP team within the client or road authority organization. England has implemented many PPP projects that have justified the need for the creation of a PPP team to carry out the due diligence for all PPP projects. The benefit of having a PPP team is the continuity and competence does not have to be recreated if the project is in another jurisdiction. PPP projects require different skills and expertise, so that a PPP team within the road authority would be beneficial as the tendering aspects require a different level of expertise. This also helps retain a knowledge center within the organization. If only one or two projects are being developed then a PPP team probably will not be necessary.

PPP projects are very different from traditional and DB methods. Since private finance is involved it is very important to develop a business case for the project and make sure that it is viable and what some call "bankable". Traditional projects had to be politically attractive and approved, but PPP projects need to be financially attractive.

Other developments and tendering aspects that differ from traditional projects include:

- Develop some form of a comparison such as a Public Sector Comparator (PSC). There needs to be some form of benchmark against traditional methods
- Hiring financial, legal, and technical experts
- Applicable EU procurement regulations (if applicable)
- Developing a list of instructions for pre-qualified participants
- Possibly marketing the project to international participants via seminars
- Developing a risk matrix for technical, financial, and project risks

- Begin to transform existing technical specifications into performance specification and outcome-based criteria
- Also approving Alternative Technical Concepts (ATCs) should be a formal practice in order to approve new and untested solutions
- Determining the road condition after contract expires or a "hand-back clause". This is important to define the technical conditions and quality standards returned back to the road authority.

## 2.7 Key choices

There are many other considerations and choices before undertaking a PPP project and are summarized below.

- Toll roads or non-toll (tolls are market based risks)
- If toll road:
  - Real tolls collected - all vehicles
  - Heavy vehicle tolls
- Payment mechanisms:
  - Availability
  - Shadow tolls
  - Heavy vehicles
  - Performance-based and /or congestion based
- Series of projects – or just one? (how to attract competition)
- Any stipends to non-winners (helps offset high tendering costs)
- "Open Book" (for Life Cycle Cost)
- How tenders are awarded - (lowest NPV or best value or other)
- Having a "PPP team" or ad-hoc staff
- Having an appropriate "*Hand-Back Clause*"
- English language for all tendering documentation (international players)
- How the evaluation of "Alternative Technical Concepts" (ATCs) will be managed

## 2.8 Potential pitfalls

In order to achieve a successful project one should know some of the potential pitfalls that have been experienced from other PPP projects. Some of these are as follows:

- Lack of understanding of DBFO delivery method (client learning process)
- Legal issues for private finance
- Not having Ministry of Finance buy-in for PPP projects (huge hurdle)
- Transparency in tendering
- No competition - enticing international competition (culture, language & partners)
- Time and ability of foreign participants to network with national partners
- Influence of project size – over €80M suggested for "Value for Money"
- Financial rating of your country & transparency
- Market risks – may cause project to fail financially
- Proposed toll technology doesn't work
- Traffic by-passing tolls
- Lower cost alternative routes or other transportation modes
- Difficulty in approving "Alternative Technical Concepts" ( many in PPP projects)
- Not having a satisfactory hand-back feature in the contract

## 2.9 Advantages and Disadvantages

The following table lists some of the major benefits and disadvantages of PPP:

Table 2 - Advantages and Disadvantages of PPP

ADVANTAGES	DISADVANTAGES
<ul style="list-style-type: none"><li>• Complete Projects Faster When Public Funding is Unavailable</li><li>• Increase the pace of infrastructure development</li><li>• Integrates the Process of Design, Construction, and Maintenance</li><li>• Better Life Cycle Costing</li><li>• Whole Life Concept</li><li>• Value For Money (VfM)</li><li>• Better Net Present Value (NPV)</li><li>• Transferring Risks To Private Sector</li><li>• Potential for Innovation</li><li>• Better Service Level (Private sector)</li><li>• Partnering Concept</li><li>• More Focus on the Road User and Customer Satisfaction</li><li>• No disruption to other normal projects</li></ul>	<ul style="list-style-type: none"><li>• Longer Tendering Process</li><li>• Large Transaction Costs</li><li>• Costs More In the Long Run</li><li>• Difficult to Change Specification after Contract Acceptance</li><li>• Large expense for Legal &amp; Financial Services</li><li>• Significant development cost</li><li>• Usually for Extremely Large Companies (not really a disadvantage)</li><li>• If Design-Build not already utilized, it may not take advantage of the real concepts for Design-Build</li></ul>

## 3. CONCLUSIONS

It is a very wise decision to thoroughly evaluate and conscientiously study all aspects of the PPP model for any proposed projects. There are so many dynamics involved and securing a project over a long-term period requires know-how, research, wisdom, and developing experts both within the client organization as well as the service providers. There have been many PPP projects that have reported good results and it is a potential delivery model for infrastructure type projects. However, each country has differing reference and cultural points, and each country needs to decide whether the PPP model can be appropriately applied for projects in their country.

PPP/DBFO is not a solution for all projects or cultures, but merely a realistic delivery method that needs to be wisely applied in the correct environment.

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