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**MİMAR SİNAN FINE ARTS UNIVERSITY**
**INSTITUTE OF SCIENCE AND TECHNOLOGY**

# IMPLEMENTATION OF TOLL ROAD PROJECTS BY B.O.T. MODEL IN TURKEY

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**ISTANBUL - JANUARY 2010**

**T.C.**
**MİMAR SİNAN GÜZEL SANATLAR ÜNİVERSİTESİ**
**FEN BİLİMLERİ ENSTİTÜSÜ**

# TÜRKİYE'DE Y.İ.D. MODELİYLE OTOYOL PROJELERİNİN YAPILMASI

**YÜKSEK LİSANS TEZİ**

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**Tez Danışmanı: Doç. Dr. Sema ERGÖNÜL**

**İSTANBUL - OCAK 2010**

Aymir Gamze KAYA tarafından hazırlanan TÜRKİYE'DE Y.İ.D. MODELİYLE OTOYOL PROJELERİNİN YAPILMASI adlı bu tezin Yüksek Lisans Tezi olarak uygun olduğunu onaylarım.

Doç. Dr. Sema ERGÖNÜL

Tez Danışmanı

Bu çalışma, jürimiz tarafından Mimar Sinan Güzel Sanatlar Üniversitesi Fen Bilimleri Enstitüsü Yapı Mühendisliği Anabilim Dalı, Yapım Proje Yönetimi Programında Yüksek Lisans Tezi olarak kabul edilmiştir.

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Bu tez, Mimar Sinan Güzel Sanatlar Üniversitesi Fen Bilimleri Enstitüsü tez yazım kurallarına uygundur.

## SUMMARY

Infrastructure is vital to the nations' production and distribution of economic output as well as the citizens' quality of life. With the economic globalization need of these infrastructure investments increased rapidly. Governments gravitated to PPPs (Public-Private-Partnerships) as alternative financing models because they can not realize these infrastructure investments by their limited budget. B.O.T. (Build-Operate-Transfer) which is one of PPP models emerged as an option to provide implementation of infrastructure projects with the financial help of private sector.

B.O.T. projects are long term, large in scale, with complex structure and require high amount of capital. Thus, detailed feasibility studies, researches and evaluations are essential. Projects which will be implemented by this model require well planned and controlled analyzes.

B.O.T. is used for infrastructure investments as energy, mining, water and transportation to meet the demand of increasing population. In recent years transportation demand increased in developing countries. Because of this one of the areas that B.O.T. mostly used is toll road projects.

There are toll road projects implemented by B.O.T. model in many countries. There is not a large scale B.O.T. toll road project in Turkey however General Directorate of Highways plans to apply this model in the near future. In this study, GİTR (Gebze - İzmir Toll Road) project which is intended to be implemented by B.O.T. model for a long time is selected as the case study.

This study argues that probable mistakes and risks of future projects can be minimized by determining success and missing points of previous B.O.T. projects. B.O.T. model is analyzed via toll road projects implemented by this model. Experiences of these example projects are analyzed in detail to propose necessary circumstances to provide future successful B.O.T. projects.

# ÖZET

Altyapı yatırımları devletlerin ekonomik verimi ve halkın yaşam kalitesi için hayati önem taşımaktadır. Ekonomik küreselleşme ile altyapı yatırımlarına olan ihtiyaç hızla artmıştır. Devletler bu altyapı yatırımlarını kendi sınırlı bütçeleriyle gerçekleştiremediklerinden alternatif finans modeli olarak KÖİ.'lere (Kamu–Özel–İşbirlikleri) yönelmişlerdir. Bu KÖİ modellelerinden biri olan Y.İ.D. (Yap–İşlet–Devret), altyapı yatırım projelerinin özel sektörün finansal yardımıyla hayata geçirilmesini sağlayacak bir seçenek olarak doğmuştur.

Y.İ.D. projeleri uzun süreli, büyük ölçekli, karmaşık yapılı ve yüksek meblağda sermaye gerektiren projelerdir. Bu nedenle detaylı fizibilite çalışmaları, araştırma ve değerlendirmeler zaruridir. Bu modelle gerçekleştirilecek projeler iyi planlanmış ve kontrollü analizler gerektirmektedir.

Y.İ.D., artan nüfusun taleplerini karşılamak üzere enerji, maden, su ve ulaştırma gibi altyapı yatırımlarında kullanılmaktadır. Son yıllarda gelişmekte olan ülkelerde ulaştırmaya dair ihtiyaç artmıştır. Bu nedenle Y.İ.D.'nin sıkça kullanıldığı alanlardan biri de otoyol projeleridir. Birçok ülkede Y.İ.D. modeliyle gerçekleştirilmiş otoyol projeleri bulunmaktadır Türkiye'de büyük ölçekli bir Y.İ.D. otoyol projesi bulunmamakla birlikte, Kara Yolları Genel Müdürlüğü yakın gelecekte bu modeli uygulamayı planlamaktadır. Bu çalışmada uzun zamandır gerçekleştirilmek istenen GİOP'i (Gebze–İzmir Otoyol Projesi) ele alınmıştır.

Bu çalışma daha önceki Y.İ.D. projelerinin başarılarının ve eksikliklerinin belirlenmesiyle, gelecekti projelerde yapılabilecek muhtemel hataların ve risklerin, en aza indirgenebileceğini savunmaktadır. Y.İ.D. modeli bu modelle hayata geçirilmiş otoyol projeleri aracılığyla incelenmiştir. Bu incelemeler ışığında gelecekteki Y.İ.D projelerinin başarıyla yapılabilmesi için gerekli koşullar önerilmiştir.

## ACKNOWLEDGMENTS

Preparing a thesis is a difficult process from beginning to end. Within this process I was not alone.

My supervisor Assoc. Prof. Dr. Sema Ergönül guided and motivated me with helpful suggestions.

Mr. Niyazi Galipoğulları shared his knowledge and experience on construction management and project financing within the lessons.

My mother and my sister were always beside me whenever I need them.

My husband helped me to overcome all the difficulties by giving patience, support and love.

My friends encouraged me and understanding of my executives made me feel diligent.

I want to thank to all of you. I could not have done this study without your support. I hope you will be happy with the result.

December, 2009

Aymir Gamze KAYA

Architect

# IMPLEMNTATION OF TOLL ROAD PROJECTS BY B.O.T. MODEL IN TURKEY

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# LIST OF ABBREVIATIONS

**B.O.T.** : Build-Operate-Transfer

**PPP** : Public Private Partnerships

**USD** : United States Dollar

**EU** : European Union

**PFI** : Project Finance International

**DoT** : Department of Transport

**IA** : Implementing Authority

**CPI** : Consumer Price Index

**TIDS** : Traffic Incident Data System

**ADB** : Asian Development Bank

**TRB** : Toll Regulatory Board

**SCC** : State Corporation Commissions

**TOR** : Terms Of Reference

**İBB** : İstanbul Metropolitan Municipality (in Turkey)

**DSİ** : Public Waterworks Administration (of Turkey)

**DHMİ** : State Airports Authority (of Turkey)

**TL** : Turkish Lira

# INTRODUCTION

In the process of economic globalization the need for infrastructure investments increased in developing countries. Correspondingly, scale of infrastructure projects grew and these projects became more capital-intensive. Within the time private companies developed and achieved capital accumulation to operate in every sector. However public sector could not be successful in rapidly evolving competition. As a result of all these conditions, countries began to look for new financing models for implementing their investments.

Since the public projects can not be completed in predicted time and cost, they cause waste of resources and also predicted benefits from these projects can not be provided. Due to both lack of resources government owns to respond increasing needs and high efficiency of private sector, alternative ways are searched to provide benefit from private sector efficiency. Public Private Partnerships (PPP) are the alternative financing models to meet the requirements of public sector.

PPPs are the cooperation of public and private sectors in the areas such as financing, construction, operation or renovation for implementing infrastructure projects or services ("EU Commission", 2003). The main purpose of PPP is to bring public and private sector capacities together for a common interest.

PPP models are growing in popularity as governments seek to involve the private sector in the funding and operation of public infrastructure. Private sector investments and management of public sector assets is being openly encouraged by governments. Furthermore multilateral agencies recognize that private sector companies are better equipped and more efficient than governments in developing and managing major public services. PPPs which are a variant of the Build-Operate-Transfer (B.O.T.) and Design-Build-Finance-Operate (D.B.F.O.) concepts have been widely accepted and implemented by a number of European governments. PPPs can take several forms as:

- Build-Operate-Transfer (B.O.T.): A private consortium builds a project to meet a government agency's requirement and provides complete design or augments the owner's design development. The consortium finances, constructs, operates and maintains the facility during a specified concession period. The entity collects revenue from the project during the concession period and turns title over to the government agency at the end of that period.

- Build-Own-Operate (B.O.O.): Similar to B.O.T. above except that there is no transfer of ownership, the consortium owns and operates the project.

- Design-Build-Operate-Maintain (D.B.O.M.): A private developer group will provide design/build services to construct a publicly owned facility and assume operational and maintenance responsibility for a specific period of time. Repayment can be via and annual payment, or if revenue producing, via collection of tolls.

- Lease-Develop-Operate (L.D.O.): A private entity will lease a facility from a public agency, provide the capital to renovate, expand or upgrade and operate the facility under a contract with that public agency.

- Buy-Build-Operate (B.B.O.): A public agency will sell an asset to a private group that will complete any improvements such as expansion or the rehabilitation necessary to create a profitable venture for the private group to operate.

- Availability Payment Process (A.P.P.): A process whereby a public agency makes periodic payments to a private concessionaire in return for delivering a service or product (Levy, 2008).

Other forms of PPPs such as Semi Build-Operate-Transfer (Semi B.O.T.), Build-Hire-Transfer (B.H.T.), Transfer of Operation Rights (T.O.R.), Long Term Hire (L.T.H.), Build-Own-Operate-Transfer (B.O.O.T.), Maintain-Operate-Transfer (M.O.T.), Additional Finance-Operate (A.F.O.), Buy-Build-Operate (B.B.O.) are also employed to one end: providing a service or product to the public sector in with the ability of the private sector to earn a reasonable profit on the venture.

There are laws in Turkey about Build-Operate-Transfer (B.O.T.), Build-Operate (B.O.), Build-Hire-Transfer (B.H.T.), Transfer of Operation Rights (T.O.R.) and Long Term Hire (L.T.H.) types of PPPs.

Build-Operate-Transfer (B.O.T.) which is an important type of PPP model is, recently used as popular financing model for implementing infrastructure investments.

Infrastructure is vital to the nation's production and distribution of economic output as well as to its citizens' quality of life. The cost of constructing, maintaining and operating infrastructure projects is high. B.O.T. has emerged as an option to build infrastructure with the financial aid of the private sector when governments suffer from shortages in their budget. B.O.T. is a valid financing system, whereby a private sponsor finances the design, construction, maintenance and operation of a public project for a specified concession period, at the end of which it transfers ownership to the government (Algarni, et al, 2007).

B.O.T. is mostly used in less developed and developing countries that have limited resources and financing shortage for proposed investments. Basic purpose of B.O.T. model is to procure public sector investments in care of private sector. This model is generally used for infrastructure investments as energy, mining and water sector that a great many of people are consumer.

The B.O.T. model features a long term, high investment, complex structure and process with exposure to multiple risks (Chuan, Messner, 2003). Projects are generally large in scale and require important amount of capital investments. Thus, it is essential to foresee the risks and decide whether the project is appropriate to be implemented by this model.

One of the areas that B.O.T. model mostly used is toll roads. National road networks are cracking under the strain of increased user demand and falling government budgets for maintenance and future expansion. Private sector companies are now encouraged to build, fund and operate new and existing roads by B.O.T. model.

In Turkey there are a few projects implemented by B.O.T. model. But, there is not any large scale toll road project implemented by B.O.T. model until now. However, General Directorate of Highways intends to realize a few toll road projects by this model in the near future.

## AIM OF THE STUDY

The aim of this study is firstly to analyze B.O.T. projects implemented in the world and in Turkey. Then, it is to provide some suggestions for future B.O.T. projects to be implemented in Turkey.

Since B.O.T. model is commonly used for toll road projects in many countries. Thus Gebze – İzmir Toll Road (GİTR) project is chosen as a case study because it is an important project for Turkey. Preliminary studies of the project commenced almost 20 years ago and its construction has not yet started because of some deficiencies encountared. The objective is to underline the main points to realize this project by B.O.T. model successfully. This study argues that probable mistakes and risks of future projects can be minimized by determining successes and missing points of previous B.O.T. projects.

## RESEARCH METHODOLOGY

In order to achieve the aim of the study, following research methods are used:

- Literature search on PPP models and especially B.O.T. financing model.
- Analysis of B.O.T. projects in the world by pointing their advantages, disadvantages and missing points.
- Analysis of B.O.T. projects in Turkey.
- Evaluation of Gebze- İzmir Toll Road (GİTR) project as a case study.
- Comparison of B.O.T. projects analyzed and providing suggestions for future B.O.T. projects.

# 1 BUILD-OPERATE-TRANSFER (B.O.T.) MODEL

## 1.1 DESCRIPTION OF B.O.T. MODEL

B.O.T. is an alternative financing model that arised from the countries' requirement of implementing infrastructure investments which they can not realize by their limited own funds. In general meaning, B.O.T. model can be illustrated as, realization of a public infrastructure investment or service which is financed and implemented by a private corporation. Also operation of this facility during a while that public sector determines is the private companies' liability. The private company can dispose produced output or service in this while with previously confirmed price to the public sector. At the end of predetermined operating period the private company turns over the facility to the public sector in full force, maintained, working and free of cost ("Kamu Alyapı", 2006). This B.O.T. model process is shown in Figure 1.1.

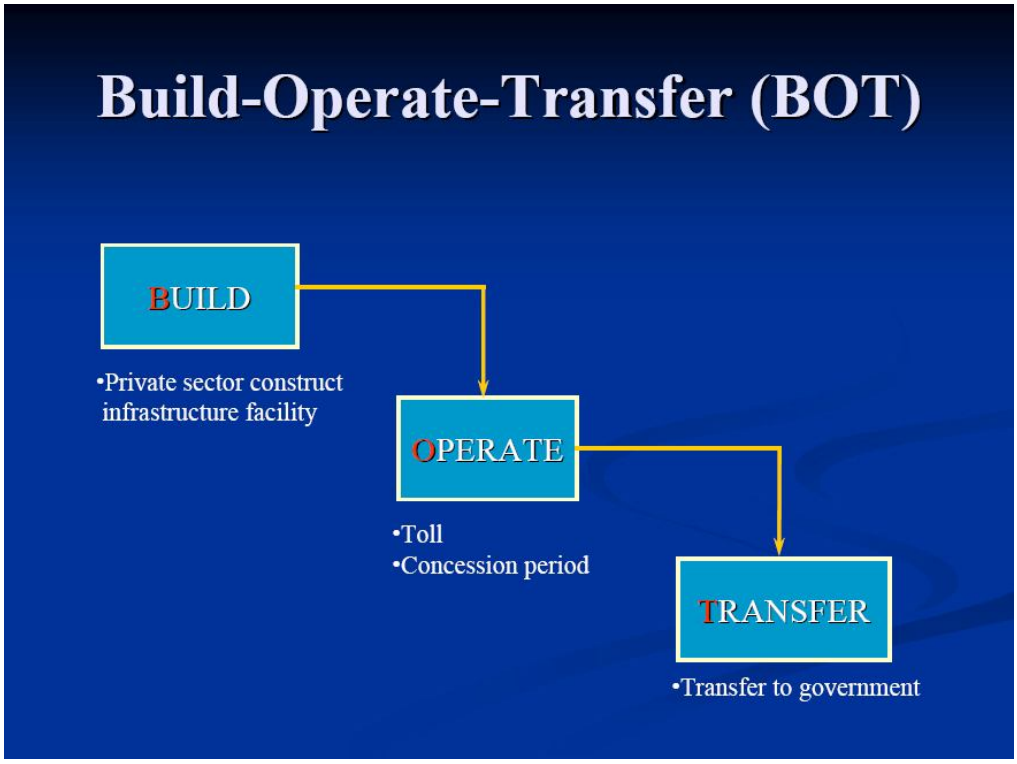



Figure: 1.1 Logic Model of B.O.T. Model (Awakul, 2009)

The purpose of B.O.T. model is:

- to decrease public expenditure,
- to give countdown to the private sector,
- to decrease requirement and deficiency of external finance,
- to provide quality and competition via inflow of foreign capital and know-how (Polatkan, 1997).

Also through this model dependence of public budgetary is decreased, investments and employment opportunities are increased.

B.O.T. model is mostly used in underdeveloped or developing countries. Because these countries have deficient public resources and finance distress for implementing planned investments. By this way desirable investments can be realized with extra budgetary resources. With the assistance of this model the purpose of implementing large scale investment projects as tunnels, natural gas and petrol pipelines, power plants, dams, waste water treatment facilities, marines, airports and toll roads can be fulfilled (Sevil, Başar, 1999).

## 1.2 GENERAL CHARACTERISTIC OF B.O.T. MODEL

B.O.T. model is an important component of the public private partnerships (PPP). The model aims to generate projects for public benefit. One of the parties of B.O.T. projects is a public institution and the other one is usually a consortium which is consisted of international companies. The facility implemented with this model, return back to the public sector at the end of predetermined duration without being a burden to the public budget. The actual aim is not making profit but effectuating the project (Polatkan, 1997).

In B.O.T. model one of the parties of the contract is a public institution and another is usually a joint enterprise corporation (Sevil, Başar, 1999). But the joint enterprises that enter into a B.O.T. model contract must be an incorporated society. Constructions of the B.O.T. projects are under the government security against all

types of sabotage. Besides, in these projects public sector institution that is denominated as the client, is under the guarantee of the Federal Treasury or National Finance (Polatkan, 1997).

In B.O.T. model basically the joint enterprise corporation is expected to:

- Realize the whole investment with the finance of it,
- Assume operation and maintain expenditure of the facility,
- Repay the credit -if there is a loan taken up-,
- Regain its own capital within a framework of a designated program,
- Endorse over the facility to the public sector in the end of predetermined operation period.

Also with this model, arousing private sector's resources and using know-how and skills of private sector is anticipated.

In the projects implemented by B.O.T. model, the client usually chooses the preferred bidder who offers to operate the facility at a moderate charge in its bidding. Because the basic aim of the project is public benefit. For example if a bridge project is going to be effectuated by this model, the private company which offers the minimum price for bridge toll per vehicle has to obtain the contract.

Projects implemented by B.O.T. model are usually realized in a long time period with the government's own resources but private enterprises can realize them in a relatively short period. The repayments to the bank will be started after the contactor takes up a loan. How long the construction period of the projects extents, that much the operation period of that facility shortens. If the contractor can not finish the works at the specified date, the client can have a right to demand penalty for delay. Also because the repayments will be started at the same time the contractor will lose money every day in delay (Galipoğulları, 2007).

B.O.T. model is carried out within the framework of a contract, charge of the produced production or service is specified within this contract. Also duration of

nomination of the private sector corporation is indicated in this contract. However there are examples of 99 year B.O.T. contracts, legislations in common practice limit this period to 49 years. B.O.T. is a sort of contract that B.O.T. parties are liable mutually. Besides every stage of the B.O.T. investments are inspected by government. The contractor company can not delegate authorization of production to another company without the permission of government.

As shown in Figure 1.2 and 1.3, there are many parties within a typical B.O.T. projects as followings:

- A public organization as the client of the project,
- Lender companies,
- Insurance companies,
- Technical, financial and legal consultants,
- Contractor companies (usually joint enterprise) who perform the project,
- Sponsor companies.

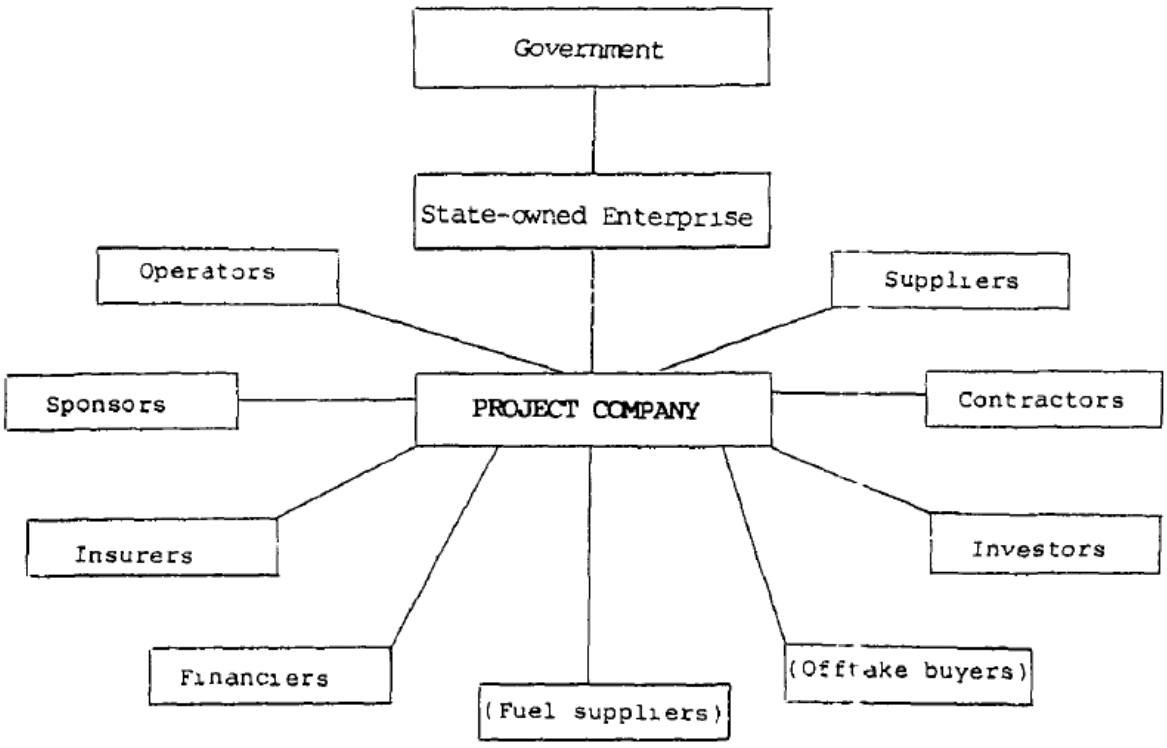



Figure 1.2 B.O.T. Infrastructure Project Matrix (Handley, 1997)

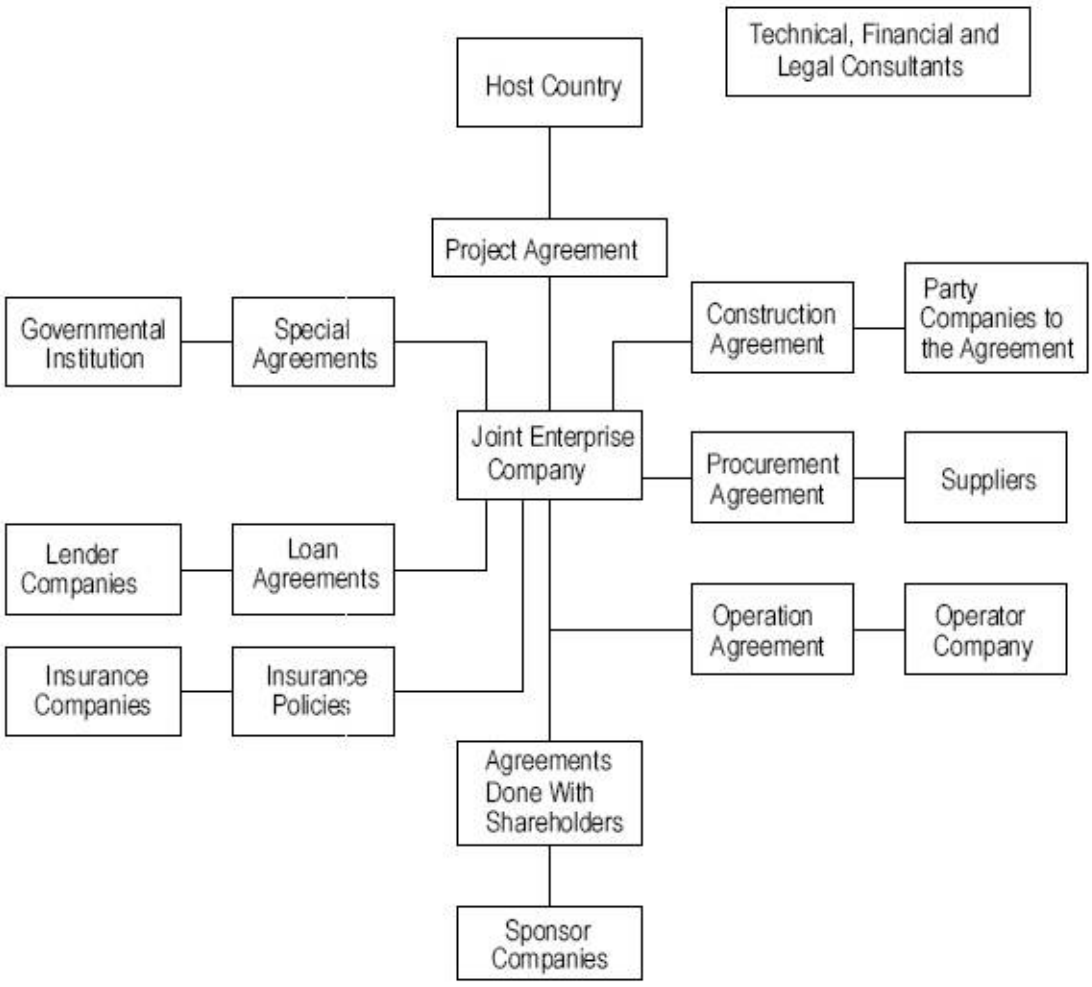



Figure 1.3 Parties of B.O.T. Projects (Sevil, Başar, 1999)

In B.O.T. model, a joint enterprise company is established to be responsible for construction and operation of the project. This company takes place in B.O.T. model designs the project, defines relationships between the parties and finances the project. Also B.O.T. model is not only used for newly investments, but also for completion or renovation investments.

In the B.O.T. projects general risks met are:

- Long period of given concession,
- Characteristic and amount of the investment,
- Many companies that take place as parties of the project,

- Determining price of the service or the product which will be produced,
- Uncertainty of getting desired revenue,
- Economical and political conditions of the country which the project will be implemented ("Kamu Alyapı", 2006).

On these grounds, projects which are intended to be implemented by B.O.T. model require well planned and controlled analyzes. If a project is going to be implemented by B.O.T. model, feasibility report and finance plan of the project must be prepared; offered lending rates and reality of the loan expenditures must be discussed. The public corporation has the right to specify the operation conditions of the facility and terms of the contract at the agreements between the parties. Accordingly the governance has to take into consideration followings:

- To ascertain if there are other bidders or not,
- To make required risk analysis and evaluations,
- To determine risks which are going to be transferred to the private company,
- To make necessary market studies, cost-benefit analysis and secure those cost analysis to be realistic,
- To look after public benefits with the possible care when determining construction, operation and handover terms.

Also within the B.O.T. model investments with long operation period; opportunities and prices of feedstock, market for final product, necessary labor force which will be employed, political situation of the country factors have to be taken into account and controlled during the operation period.

In the projects implemented by B.O.T. model, the firms which obtain foreign capital are very sensitive about the host country's political and economic stability. Because the investment is very big, return of the wasted money takes long time and the other party who signs the agreement is a public institution. Points above have to be taken

into consideration carefully because the projects implemented by B.O.T. model effect directly on the economic, social and political structure of that country.

## 1.3 CAUSES TO USE B.O.T. MODEL

At 1970s public investments became expensive and insufficient at operation period. Price and quality of throughput was deficient and without competitive strength at world market. Thus these investments were perceived as a burden on national economies (Erdoğdu, 1997).

Public projects could not be completed in estimated time and budget because the institutions did not make healthy and realistic feasibility studies on cost and time. Also many projects with prohibitive costs over finance opportunities tried to be executed at the same time and enough resources could not be allocated to these projects. This situation caused waste of resources and expected benefits could not be reaped. Thus receiving support from private sector to implement and operate this kind of public infrastructure investments or services occured. This system would not only provide source of financing but also make good use of private companies' operation and administration skills (Erdoğdu, 1997).

Nearly last 25 years Turkish government had to allow a major part of its income to repayment of internal and external debts with the impact of high inflation. At 1960, 33-34% part of budget expenditures was allowed to investment spending. But at 2000 this percentage has deteriorated to 3-4%. On the other hand in this period of time, making investments did not come attractive to the private sector because of very high inflation rates. At this period, private sector participation was fostered and picked up speed all around the world. Private financial institutions began to be gravitated instead of government credit to obtain required credit for project financing. Again at that time private evaluation firms began to celebrate countries' capacity to open a credit and evaluate risks by examining countries' political and social conditions.

Increasing population, exponential urbanization, loom large of quality at service made large scale resource and financing necessary. Within the process of economical

globalization, at developing countries there was an increasing need of large scale infrastructure investments which are complex and high priced. Also for this kind of investments there was need of new engineering development and know-how.

As a result of all these processes at home and abroad, Turkey also had difficulties to find internal and external finance opportunities which are required for public investments. In this case to finance the investments different searches, different formulas and methods began to come up. In parallel with these conditions in other countries -especially in developing countries- to effectuate infrastructure investments, B.O.T. model came into existence as a new model.

## 1.4 ADVANTAGES AND DISADVANTAGES OF B.O.T. MODEL

As other finance models B.O.T. model has advantages and disadvantages too. To use advantages of the model for the project benefits is possible. Also considering disadvantages of the model will enable to minimize mistakes and damages. From designation stage of the projects examining these points carefully will make the project to finish at planned time and within the planned budget successfully. B.O.T. projects are large scale projects and there is no place for surprises.

### 1.4.1 Advantages of B.O.T. Model

When the B.O.T. is analyzed there are many direct and indirect benefits and advantages of the model. These advantages are: (Galipoğulları, 2007), (İmre, 2001)

- The burden that government undertakes decreases by enabling implementation of public infrastructure projects with the hand of private sector.
- Inflow of outside funds, state of the art technology and know-how raise through the joint enterprises.
- The public sector derives a benefit from the private sector's experience and efficiency.

- The country's external debt doesn't accrue because financing of the project is undertaken by private companies.
- Employment improves through this model.
- Idle resources of economy put on action by the help of this model.
- Model can be applied to not only new projects but also the projects that public corporation could not complete for along time.
- Model dispels difference of development between the regions of the country.
- This model enhances attraction to some investment areas.
- Model improves economical efficiency because the private sector can evaluate in detail about which project's execution will be more feasible.
- Private companies can complete the projects which they construct and operate, earlier than the public sector.
- Structures of private sector investors which are consist of foreign and local shareholders, make for the host country's advantage in international relationships.
- Through this model big amount of financial resources would be assured.
- Public sector doesn't undertake construction and operation risks because they are devolved to the private sector.

### 1.4.2 Disadvantages of B.O.T. Model

B.O.T. model also has some disadvantages which have to be considered carefully. These points to consider carefully are: (Sevil, Başar, 1999), (Galipoğulları, 2007), (İmre, 2001)

- The private companies can heighten investment cost because they demand security for profit. Thus total cost of the project can be raised at B.O.T. projects.

- The model has a complex structure that involves many parties to close a deal. So cases as relationships and division of labor between the parties are very important to execute the project successfully.

- Economical and political stability of the country effects directly on the B.O.T. project that distributes to a long time period. This case is risky.

- Because Return of the investment takes long time at the projects done by B.O.T. model private sector may not find these projects very attractive.

- Projects done by B.O.T. model can be influenced by economical and political diversifications of the host country.

- At B.O.T. projects amount of the investment is big and rate of the loan is high. Thus there are risks of being unsuccessful about finding the necessary finance and integration of works within the time.

- Usually minimum one shareholder of the joint enterprise that implements the B.O.T. project is a foreign company. Thus escalation can cause extra gains or losses.

- At this model, top level bureaucrats of the government decide about the execution of the projects. Thus these projects have to be investigated deeply and detailed to obstruct exploitation.

- Because concerned laws are straggly and not as a whole, structure of the concerned laws bounds B.O.T. model's fastness and field of application.

- B.O.T. Projects that public sector intend to realize have to be profitable as custom of the model to attract the private sector's attention. However most of the projects that the public sector undertakes for public benefit are non profit or making profit is not the first point.

- Lack of required know-how of the public sector for novel projects which will be done by B.O.T. model raises risk of realizing these projects.

- Devolving of the works to the private sector which used to be implemented by government can cause die away of public sector employer capacity who deal out with these works.

- Attraction of foreign capital to B.O.T. projects can cause the react of the community because it can remind estrangement.

- At this model there is a risk that there can be lack of embracing the project by the community because the project is financed and operated by the private sector.

- At the preparation stage lack of necessary studies which have to be prepared sufficiently, like technical, economical and financial feasibility or income and risk analysis, may endanger future life of the B.O.T. project.

- Fundamental mistakes –especially at draft contract phase of B.O.T. projects– as wrong risk distribution or deficient and insufficient sanctions may engender serious problems at long-term B.O.T. model projects.

It is possible to convert disadvantages to advantages or to minimize problems. Both public and private corporations have to examine each point in detail. Before beginning the project they have to carefully analyze all disadvantages and also advantages of B.O.T. model.

# 2 IMPLEMENTATIONS OF B.O.T. MODEL IN THE WORLD

## 2.1 PROJECTS IMPLEMENTED BY B.O.T. MODEL

History of B.O.T. model comes date back to Queen Victoria time at England. It is known that in this period the public sector make the private sector construct and renovate waterworks and electricity distribution networks through B.O.T. model. In the 19th century such a model was used in Ottoman Empire and Germany also accepting transportation services.

In the contemporary sense, the model was used at 1970s in USA to effectuate a few power plants. The model evolved rapidly in a short time of period and tried to be used to realize infrastructure investments widely in Far East and Latin America regions. This model was also used in France to construct channels and bridges in the 17th century. B.O.T. model became prevalent after the process of globalization gained speed around the world after 1980s. B.O.T. model became gradually prevalent during last decade because governments decrease investment expenses according to the policy they follow. World Bank and other foreign investment banks prefer to meet loan demand of public-private partnership models. Furthermore international lenders like the Asian Development Bank, World Bank and United States Agency for International Development encourage collaboration between the public authorities and the private sector organizations.

Countries as South Africa, Botswana, Nigeria, also Australia, Seychelles, Philippines, Mauritius, Korea, Malaysia, India, China, Hong Kong, USA, Brazil, Canada, Mexico, Qatar, Turkey, Denmark and all EU accession countries are using or are seriously looking at Public Private Partnership models as B.O.T. There are also developed countries experienced on B.O.T. model as UK, Ireland and Netherlands. Number of the countries that applies public-private partnership models in the world was 10 at 1999. But, this number heightened to more than 80 at 2006. This shows public private partnership models –especially B.O.T. model– will grow considerably in forthcoming years. Applying B.O.T. model to toll road projects is tries to be analyzed by a few example projects below.

## 2.2 TOLL ROAD PROJECTS IMPLEMENTED BY B.O.T. MODEL

In recent years transportation demands have been increased in all countries. General budget finance and traditional access model could not be able to meet these demands. In many countries most of the freight and passengers transportation is done by highways. High-tech built controlled roads, expressways and motorways are built as toll roads because they require high finance and also portion parting from general budget to built motorways is not enough.

By implementing toll road projects with B.O.T. model, private companies endorse over not only construction but also operation and maintain costs to the private sector.

There are many examples of toll roads constructed by B.O.T. model in many countries.

### 2.2.1 M6 Motorway (Hungary)

| | |
|---|---|
| **Location of the Project** | Between Budapest and Dunaujvaros in Hungary ("M6 Duna", 2006). |
| **Duration of the Project** | 22 years concession period with 18 months construction period. Construction began in October 2004 and finished at September 2006 ("M6 Duna", 2006). |
| **Reasons to Implement the Project** | To match traffic capacity of the region, to facilitate the local traffic and the movement of farm equipment, to help local development, to make faster connection between Erd and Dunaujvaros |
| **Parties of the Project** | Public part is Hungarian Ministry of Economy and Transport<br>Private part is Consortium of Bilfinger Berger B.O.T. GmbH of Germany and the Austrian construction companies Porr Infrastruktur GmbH and Swietelsky International GmbH.<br>Financial and legal advisers are ING and Linklaters ("Refinance of", 2006). |
| **General Points of the Project** | The largest Hungarian Public Private Partnership (PPP) project. |
| **Missing Points of the Project** | Hungary has not yet acceded to the EU, thus existing domestic procurement procedures were used but tried to make as close as possible to EU standards. |
| **Key Points of the Project** | This project was finished in a short timescale. There was a big support of the government for the success of the project. This project was assisted by the significant experienced advisors, sponsors and lenders. The Government had a professional project team ("M6 Motorway", 2009). |

Details of the project are also provided in Appendix-B. A view of M6 Motorway is shown in Picture 2.1 and route of the toll road is also shown in Figure 2.1.

Picture 2.1 M6 Motorway (Schlor, 2006)

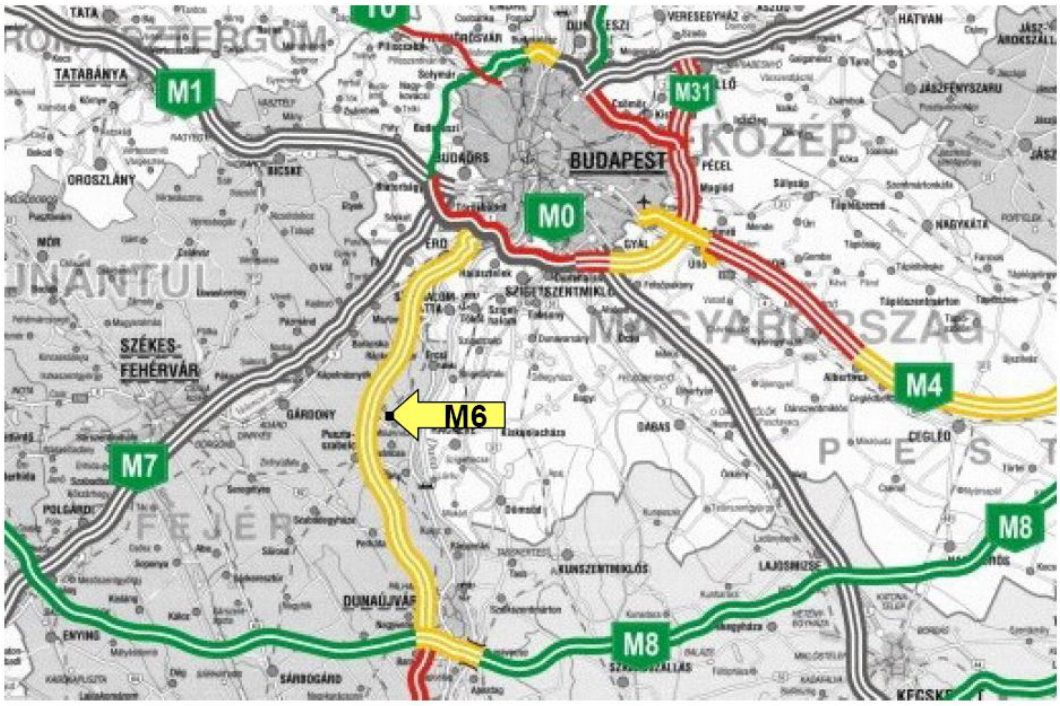



Figure 2.1 Accessing Route of M6 Motorway (Schlor, 2006)

General Points, Missing Points and Evaluation of the Project:

M6 Motorway is the first Public Private Partnership (PPP) aimed at attracting a new type of investor to the Hungarian market. The project was advertised internationally but existing domestic procurement procedures were used because Hungary has not yet acceded to the EU. These procedures were quite rigid in format and timetable.

They were not well situated to B.O.T. projects, but were made as close as possible to EU standards (Dinham et al., 2009).

The project was brought to close in a very short timescale. This is an important evidence of the support within the Government for this B.O.T. project ("M6 Motorway", 2009). Also readiness of the Ministry of Economy and Transport make this deal happen. This project was assisted by the significant experience of the Government's advisers. Again, willingness of the sponsors, lenders and their advisers affected the project positively.

There are many reasons that made the project successful, but the most important one is strong political commitment shown by the Ministers and the Government and the dedication and professionalism shown by the Government's project team. From the start of the tender the approach to the market was sensible, international precedents were taken as sample, necessary permits and acquisition were well arranged. Also earlier constructed M5 Motorway gave an opinion although project's contract was significantly different (Dinham et al., 2009).

B.O.T. model has successfully applied to this project. The M6 Motorway will clearly show that the Hungarian Government is fully committed to private sector provision of infrastructure and is supporting the forthcoming B.O.T. program ("M6 Motorway", 2009).

### 2.2.2 The N4 Toll Road (South Africa&Mozambique)

| | |
|---|---|
| **Location of the Project** | This project is between Pretoria (South Africa) and Maputo (Mozambique) ("South Africa", 2009). |
| **Duration of the Project** | Tender was in 1996. The contract was awarded in December 1996 and signed in May 1997. Concession period is 30 years. |
| **Reasons to Implement the Project** | To develop transportation axis between the port of Maputo and the industrial center of South Africa ("South Africa", 2009). |
| **Parties of the Project** | In the name of the public Sector (IA) prepared concession contract (SANRAL) and (ANE) served as the government authorities and public management. Private party is a consortium of South African and Mozambican companies named Trans African Concessions (Pty) Ltd (TRAC). |
| **General Points of the Project** | There was no government subsidies provided for this project. Most of the revenues are used for improvement and maintenance. In 2007, the concessionaire began testing a camera system at the Maputo Toll Plaza, upgrading their methods to prevent corruption ("South Africa", 2009). |
| **Missing Points of the Project** | Residents in poor communities were unable or unwilling to pay high toll fees. Overloaded vehicles caused road damage. Local rural women trying to cell fruit to travelers beside road was illegal and caused danger. During heavy rains water run-off caused local residential flooding. Fast-track approach of selection of bidders can cause problems ("South Africa", 2009). |
| **Key Points of the Project** | The private sector involvement was encouraged by Public sector. Both of the countries shared liability equally and commercial risk has been shared between the partners. To protect the road the roles and obligations of all parties were well defined in the contract. To avoid high increase of toll rates annually increases were well defined within the contract. Discounts for regular users helped to reduce the user payment objections ("South Africa", 2009). |

Details of the project are also provided in Appendix-C. Views of N4 Toll Road are shown in Picture 2.2, Picture 2.3 and route of the toll road is also shown in Figure 2.2.

Picture 2.2 N4 Toll Road ("N4 Maputo", 2009)

Picture 2.3 N4 Toll Road ("N4 Toll Road", 2009)

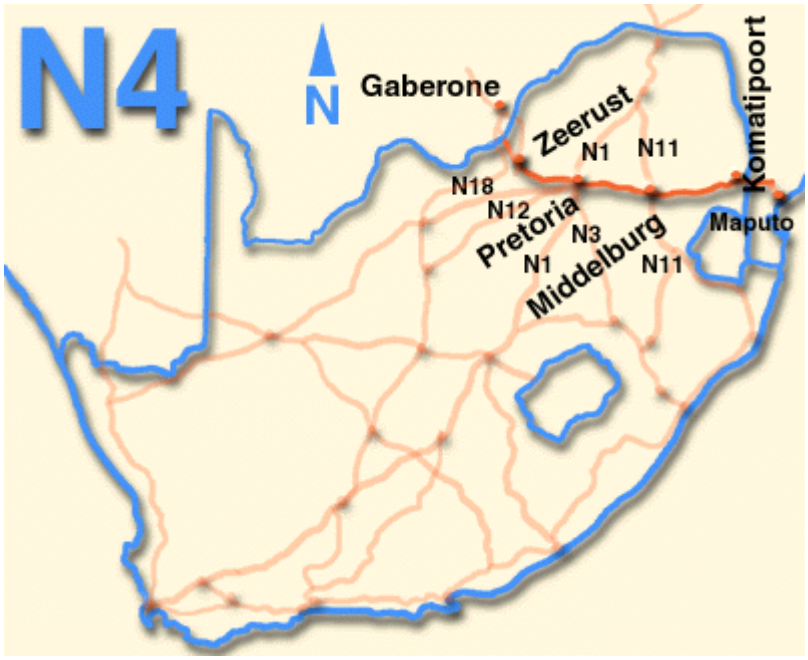



Figure 2.2 Accessing Route of N4 Toll Road ("N4 Route", 2009)

General Points, Missing Points and Evaluation of the Project:

The contract was based on a Build-Operate-Transfer model. At the beginning, the project lacked public support and the traffic volumes were not as high as the financers projected. The government has continually shown strong support for the toll road and tried to appease residents adversely affected by the project.

Although the road is in both South Africa and Mozambique, it is treated as a single entity by the two countries as a cross-border link. In this project the private sector involvement was encouraged in order to limit the long term debt burden on the public. By the way the public-private partnership quickly adopted the user pays

approach to ensure continual funding for maintenance and repairs. Both of the countries shared liability equally. And one of the points that carry this project to success is that the commercial risk has been shared between the partners ("South Africa", 2009).

Initially demand risk about using this road appeared because there was less well-maintained but free alternative routes. There was also considerable user payment risk because residents in poor communities were unable or unwilling to pay high toll fees. This led the concessionaire to agree to reduce tariffs for regular users and to begin providing services, such as twenty four hour road patrols to assist motorists to justify the west to local commuters. Also subsidization from the more affluent South African users and substantial discounts for regular users helped to reduce the user payment objections.

A major concern for the concessionaire was road damage caused by overloaded vehicles. In order to prevent rapid road deterioration South African and Mozambican governments established axel load control measures. Also -during heavy rains in the area highway water run-off caused local residential flooding. The run-off was caused by inadequate municipal storm-water drains and the government promised to correct that problem immediately.

Another problem that the concessionaire had to overcome was road-side vendors. Initially, local rural women trying to cell fruit to travelers were chased off the N4 because their activity was not only illegal but also a safety hazard. To solve this problem the concessionaire suggested to license and to formalize this activity by planning mini-markets. But the vendors opposed this suggestion on the grounds that this will deprive their potential customers. In a compromise, agreed to pave slip-off areas along the N4 Toll Road where the women could sell their products ("South Africa", 2009).

The South African government has also made a number of gestures to show their support for the project and decrease inconveniences incurred by citizens. Toll hikes increased the burden on the families with school-aged children who use N4 to travel between home and school. The Department of Transport agreed to distribute a million bicycles to rural and urban schoolchildren.

Another potential problem is about the fast-track approach of the project. From request for proposal stage to the selection of bidders stage it took 8 months. Serious or in-depth engagements with stakeholders outside of financial sector have been ignored. A few impediments have been overcome but some other issues can arise later on.

According to contract the tariffs are set jointly by both the public and the private companies. Any errors in bidding or increases in construction price can not be offset by increases in tariffs. In most of the toll road projects most of the concessionaires have serious problems because of increase in tariffs due to reflection of unexpected extra costs on toll road tariffs. South African and Mozambican governments tried to obtain their citizens' confidence at the beginning with this decision ("South Africa", 2009).

Also with detailed contract that focuses on performance specifications and outlines specific responsibilities helped the parties to avoid conflict. With this much detailed documentation and manner of prevention let the governments prevent possible problems before they happen and to take the control from beginning to end.

Many points were actually handled in detail however there are some points that did not taken into account in this project. But the problems were tried to be solved and the faults were tried to be compensated as soon as possible. The success of this B.O.T. project increased gradually.

### 2.2.3 North Luzon Expressway (Philippines)

| | |
|---|---|
| **Location of the Project** | The North Luzon Expressway extends from Balintawak in metropolitan Manila up to Sta. Ines in Pampanga in Philippines ("North Luzon ", 2009). |
| **Duration of the Project** | Contract was signed in June 1998, commenced operation in early 2003 and was completed in February 2005. Concession period is 30 years ("North Luzon ", 2009). |
| **Reasons to Implement the Project** | To avoid accidents and deaths over the years, to decrease the congestion on the route and to meet commuter's needs. To spur developing north side of metro Manila where will be the new industrial town and major civil, international aviation complex ("North Luzon ", 2009). |
| **Parties of the Project** | The public partner is the Philippine National Construction Corporation. Private company is Manila North Toll-ways Corporation (MNTC). There was also Toll Regulatory Board (TRB) as advisor of the project ("North Luzon ", 2009). |
| **General Points of the Project** | The total cost of the project is 384.000.000 USD. All risks associated with the construction phase of the project were shouldered by MNTC. There is no public sector subsidy. Also all market risks are born by private company ("North Luzon ", 2009). |
| **Missing Points of the Project** | There was not enough feasibility study to estimate toll rates. Tolls were quickly raised. In order to recoup project costs, MNTC needed to drastically increase the toll rates. |
| **Key Points of the Project** | Construction phase of the project was completed on time and under budget. Economic opportunities have increased in the regions to improved conditions via the expressway. Reasons of toll increases are well explained by public and private sector that did not caused high number of traveler decrease. |

Details of the project are also provided in Appendix-D. A general view of North Luzon Expressway is shown in Picture 2.4 and route of the toll road is also shown in Figure 2.3.

Picture 2.4 North Luzon Expressway ("North Luzon ", 2009)

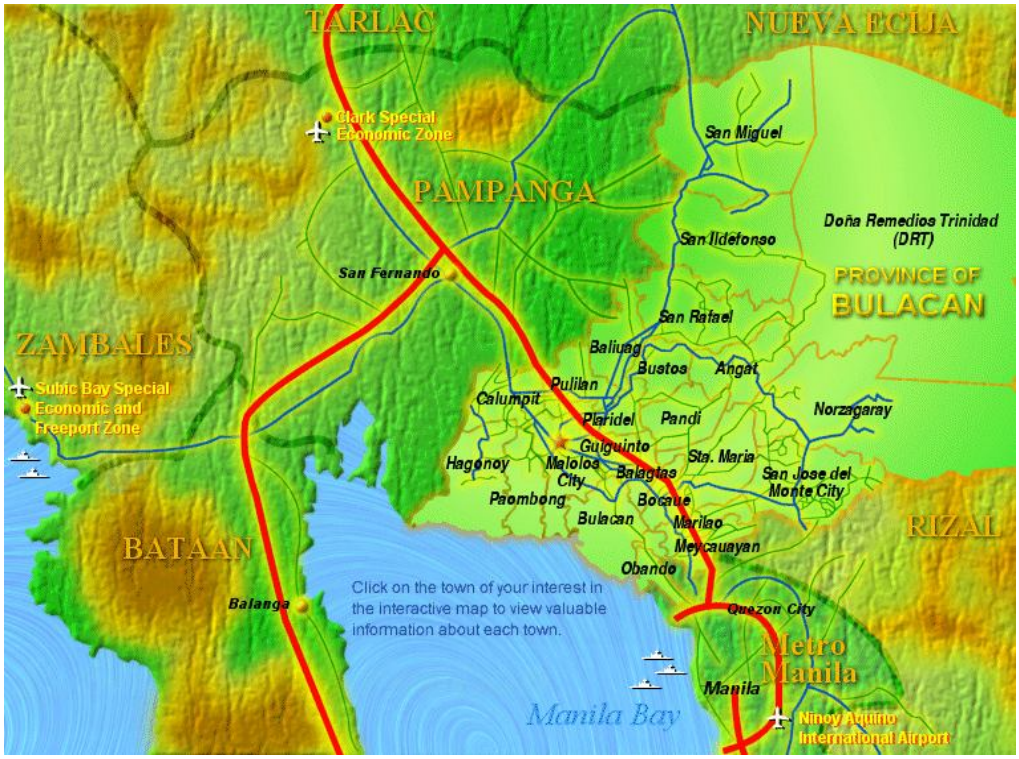



Figure 2.3 Accessing Route of North Luzon Expressway ("Bulacan Province", 2009)

General Points, Missing Points and Evaluation of the Project:

Initially, the reference toll rate was based on 1995 price levels, but tolls were quickly raised as shown in Figure 2.4.

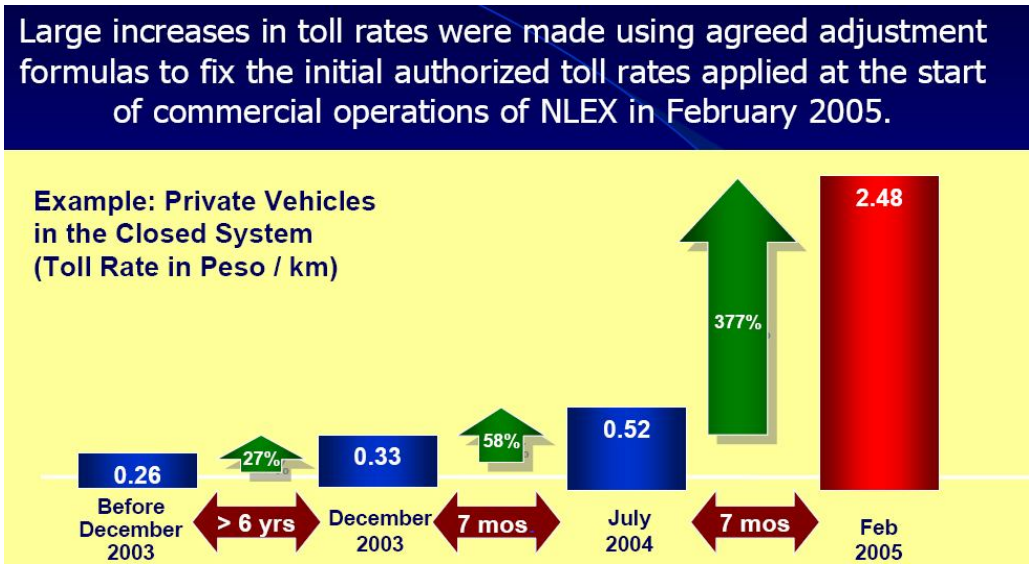



Figure 2.4 Initial Authorized Toll Rates (Pascual, 2007)

In order to recoup project costs, MNTC needed to drastically increase the toll rates for the expressway. To combat consumer opposition to the increase and gain support, MNTC instituted a comprehensive Communication Program ("North Luzon ", 2009). MNTC explained that the value added by the improved expressway would be much greater than the cost of the toll rate increases. With the support of these groups, MNTC was able to gain the support of commuters. Initially the North Luzon Expressway saw a small decrease in the number of vehicles on the road. But now the expressway sees the same level of commuters as before the toll rates increase ("United Nations", 2009).

Construction of the project was completed on time and under budget, the North Luzon Expressway has been repaired and expanded. Commute time and congestion on the road was reduced. Economic opportunities increased in the region and companies in this region can transport their products to metro Manila quicker. However initial aim seems to be achieved, it is seen that B.O.T. model could not be affectively applied to this expressway project. Tolls increase of 377 percent shows that there was not enough feasibility study and investigation to estimate toll rates and annual toll increases before the implementation of the project.

### 2.2.4 Dulles Greenway (Virginia)

| | |
|---|---|
| **Location of the Project** | Begins at VA28 by the entrance to Washington Dulles International Airport and ends at the US15 Bypass just south of Leesburg in Virginia ("Dulles Greenway", 2005). |
| **Duration of the Project** | Construction began at September 29, 1993 and the toll road was opened on October, 1995. Concession period was 40 years but it is extended to 60 years ("Dulles Greenway", 2005). |
| **Reasons to Implement the Project** | To obtain a faster link between Dulles Airport and the west points. By this toll road travelers could save one hour as compared with previous conditions ("The Dulles", 1999). |
| **Parties of the Project** | The Dulles Greenway was built by and is owned by a private corporation by the name of Toll Roads Investors Partnership II (TRIP II) ("VA 267", 2009). Greenway's equity partners include the Shenandoah Greenway Corporation, a Virginia family corporation, Italian Autostrada International S.p.a. and Brown& Root, general contractor for Greenway. Short term finance was from 5 banks from Virginia, Germany and Sweden. |
| **General Points of the Project** | The Dulles Greenway is extension and improvement of the Dulles Toll Road. Total estimated cost of the project was 326.000.000 USD. Project of the Dulles Greenway was prepared as it could be widened in the future. High-tech systems like Automatic Vehicle Identification are planned to be used ("VA 267", 2009). |
| **Missing Points of the Project** | Dulles Greenway which is the nation's first privately built highway has not met the expectations (" The Dulles", 1999). At the end of year after its opening in August 1995, vehicles per day were lower of the sponsors' expectations. The Dulles Greenway was intended to offer a faster link but the alternative toll free route was relatively preferred because of the high toll rates. Negotiations for land took time and additional resources were added to cost (Hakim, 2009). |
| **Key Points of the Project** | Potential traveler quantity was not ascertained carefully. Planned housing project through the route of the Greenway could not be implemented in the predicted short time. To increase number of travelers non-rush hours and weekends tolls were lowered, speed limit was heightened from 55mph to 65mph and electronic tolling system was established. |

Details of the project are also provided in Appendix-E. A general view of Dulles Greenway is shown in Picture 2.5 and route of the toll road is also shown in Figure 2.5.

Picture 2.5 Dulles Greenway ("Dulles Greenway", 2009)

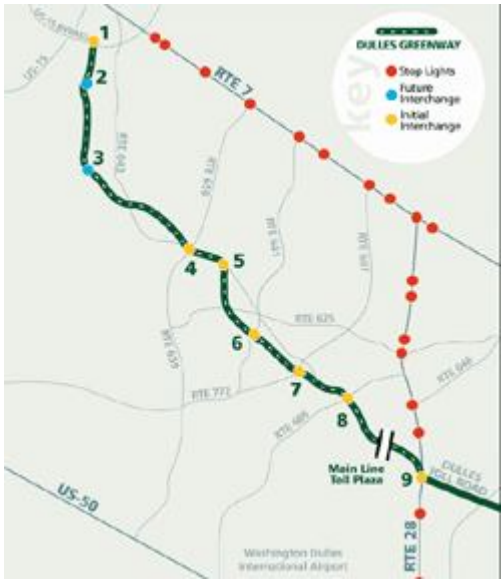



Figure 2.5 Accessing Route of Dulles Greenway ("Dulles Greenway", 2005)

General Points, Missing Points and Evaluation of the Project:

Dulles Greenway which is the nation's first privately built highway has not met the expectations (" The Dulles", 1999). In the first six months after its opening in August 1995, the toll road averaged only 10.500 vehicles per day- lower of the sponsors' expectations of 39.000 cars per day by the end of the road's first year of operation.

That means the facility earned only revenue of 7.000.000 USD instead of target toll revenue of 27.000.000 USD (" The Dulles", 1999).

The Dulles Greenway was intended to offer a faster link between Dulles Airport and the points west. However, the alternative toll free route to Leesburg (as Route 28 or Route 7) was relatively preferred because of the high toll rates at Greenway early on. Another problem was the drivers were reluctant of paying tolls that do not vary by distance and time of the day. They thought there has to be discriminatory prices of toll over distance traveled, time of day, week day or weekend day. Density of the traffic on the Dulles Greenway was 1/3 of anticipated traffic density. This shows; attitude of the drivers, their disinclination for paying tolls and potential traveler quantity were not ascertained carefully (Hakim, 2009).

Also the private toll road company faced difficulties in land acquisition. Thus land acquisition added to the cost of the project. Negotiations for land took time and additional resources were added to cost. Because of this the initial cost of toll road includes high land acquisition and construction while revenues are low extending for a long period of time (Hakim, 2009).

Again planned housing project through the route of the Greenway could not be implemented in the predicted short time. It is thought that the reason that private company wanted to build this road was this housing project which was going to be constructed by the same private company. They thought these houses would come into value with the opening of the Dulles Greenway. To put self interest over community interest caused to disregard of detailed feasibility studies.

Suggestion for increasing number of travelers included;

- lowering the toll for non-rush hours and weekends,
- pricing comparable for length traveled along the highway,
- better marketing strategies, increasing the speed limit from 55mph to 65mph,

- establishing electronic tolling as shown in Picture 2.6 ("VA 267", 2009), (Hakim, S., 2009). A picture of electronic tolling system of Dulles Greenway is shown in Picture 2.6.

Picture 2.6 Dulles Greenway (Saunders, 2006)

The Virginia Senate heightened the speed limit to 65mph in February 1996. The toll was reduced from 1.75 USD to 1.00 USD in 1996, doubling the volume. Higher speed of 65mph, electronic toll collection and a frequent user program were credited with the highway having a flow of 40.000 vehicles per day in 1999 and 60.000 vehicles per day in June 2002.

The private partners also did not pay enough attention to points below:

- an extremely large leveraged debt,
- a long time frame before profitability,
- a project subject to economic downturns ("The Dulles", 1999).

This B.O.T. project could not reach expected success however some missing points were tried to be compensated. The main advantage of the Dulles Greenway highway realized was the willing of the lenders to negotiate and wait for payments. Moreover, the highway was built in an area that was expending and growing rapidly.

### 2.2.5 Toronto Express Toll Road (ETR)-407 (Canada)

| | |
|---|---|
| **Location of the Project** | The highway extends from Brock Road in Pickering in the east to the QEW/403 interchange near Hamilton in the west in Canada. |
| **Duration of the Project** | Project was opened to bid in September 1993 and construction started in the summer of 1994. The first 36km were completed in December 1996. Sections of the highway were constructed with no more than 30 days between design completion and construction start. Concession period is 99 years (Larsen, 2009). |
| **Reasons to Implement the Project** | To establish a major east-west corridor across the suburbs to the north of the city, to relieve congestion on Highway 401 (Mylvaganam, Borins, 2004). |
| **Parties of the Project** | Public Sector is Ministry of Transport Ontorio. Private company is ETR International Inc. Later on operation right of the road was sold to a consortium of Canadian- Spanish and Australian interests operating under the name 407 International Inc (Larsen, 2009). |
| **General Points of the Project** | The 407 ETR represents the Ministry of Transportation, Ontario (MTO)'s first attempt at a B.O.T. project. A system of cameras and transponders to toll vehicles automatically was used. Thus, 407 ETR is the world's first highway to feature this system through. Total cost of the project is 1.000.000.000 USD (Imad, 1998). |
| **Missing Points of the Project** | Neither traffic levels nor toll revenues were guaranteed by the public sector. Because of this high risk ETR International Inc. sold operation right to 407 International Inc. According to the contract the private company can not raise tolls over limits and will have to design the project that can be expanded in the future. (Mylvaganam, Borins, 2004) |
| **Key Points of the Project** | The government could not effectively transfer financing risks. The private company had unlimited control of the highway and its tolls with this agreement. Project has started as a B.O.T. project but later is operated in a mixed model. Lack of detailed feasibility studies and special agreement which had to be done by Ontario province, the private operator used these missing points for its own interest (Larsen, 2009). |

Details of the project are also provided in Appendix-F. A view of Dulles Greenway is shown in Picture 2.7 and route of the toll road is also shown in Figure 2.6.

Picture 2.7 ETR-407 (Persad, 2005)


Figure 2.6 Accessing Route of Highway 407 Express Toll Road ("Toronto, Canada", 2008)

General Points, Missing Points and Evaluation of the Project:

In this project with the agreement between Ontario government and private company the private partner would be remunerated from toll revenues but neither traffic levels nor toll revenues were guaranteed. The private partner was financially exposed to the operating risk. The private partners were unwilling to assume this risk. As a result,

the province retained operational risks during the first 18 months. This risk was only reduced when it sold the highway's operating concession to a Canadian- Spanish-Australian consortium called Cintra-Macquarie (C-M) for 3.100.000.000 USD (Larsen, 2009).

The toll increases decreased demand of using 407 ETR, caused congestion on adjacent roads. In February 2004, the government claimed the private company that it had breached its contract by raising tolls without getting the government permission. After two unsuccessful legal attempts, Ontario and ETR 407 came to an agreement operation right of the toll road was sold to another private company. The major weakness of ETR 407 was the failure of the government to effectively transfer financing risks. The ETR 407 operator has been interested in maximizing profits rather than optimizing metropolitan Toronto traffic flows. At the same time Ontario province appears to have behaved opportunistically when political costs escalated because of the toll increases.

Also shortly after the sale of the toll road, Ontario's government has changed. The Liberal Party in charge did not favor privatization of the toll road. Change in government has increased litigation. The 99 year concession period was another concern. 99 year period is an unusual and very long term for a concession. Also the private company had unlimited control of the highway and its tolls with this agreement. The government also may not build any nearby freeway which might potentially compete with 407 (Mylvaganam, Borins, 2004).

Another point is the public opposed high toll rate increases. The concessionaire should undertake a public relations and marketing effort to assure the public that its interests are being served. Because of the congested traffic in Toronto travelers had to use ETR 407 reluctantly. Critics have complained that the rising toll rates have made Highway 407 more of a 'luxury' rather than a bypass on existing congested roads as it was initially intended (Mylvaganam, Borins, 2004).

This project has started as a B.O.T. project but later is operated with mixed model. Due to lack of detailed feasibility studies and special agreement which had to be done by Ontario province, the private operator used these missing points for its own interest.

### 2.2.6 Second Stage Toll Road (Thailand)

| | |
|---|---|
| **Location of the Project** | Connecting with the First Stage Expressway (FSE) to form an inner ring road around Bangkok in Thailand ("Privatization of", 2009). |
| **Duration of the Project** | Tender was in 1987.The 30-year concession agreement was signed in October 1988 which consist of 3 years construction period and 27 years operating period. The road was opened to traffic in 1994 (Awakul, 2009). |
| **Reasons to Implement the Project** | To complete the successful First Stage Expressway (FSE) serving as shot cuts between the inner city and the outer areas. To reduce the heavy traffic in the city center ("Privatization of", 2009). |
| **Parties of the Project** | Private company is Bangkok Expressway Company Limited (BECL). The public sector is Expressway and Rapid Transit Agency of Thailand (ETA). Lenders are 11 Thai banks, 30 foreign banks and the Asian Development Bank (Awakul, 2009). |
| **General Points of the Project** | Second Stage Expressway (SSE) is the first infrastructure project in Thailand implemented by B.O.T. model and regarded as a test case for B.O.T. possibilities throughout the region. There was no government guarantee. |
| **Missing Points of the Project** | The private company signed contract with ETA but no one knew the conditions. This ran into political difficulties, creating uncertainties. Lack of transparency has worked as an impediment to explain toll increases necessity. |
| **Key Points of the Project** | The SSE can not be designated as a successful B.O.T. project. The government did not implement the staged toll increase plan. ETA heightened tolls sharply and this caused opposition of public and decrease of traffic volume. Confidence of the international community was undermined. |

Details of the project are also provided in Appendix-G. A general view of Dulles Greenway is shown in Picture 2.8 and route of the toll road is also shown in Figure 2.7.

Picture 2.8 Second Stage Toll Road ("Second Stage", 2009)

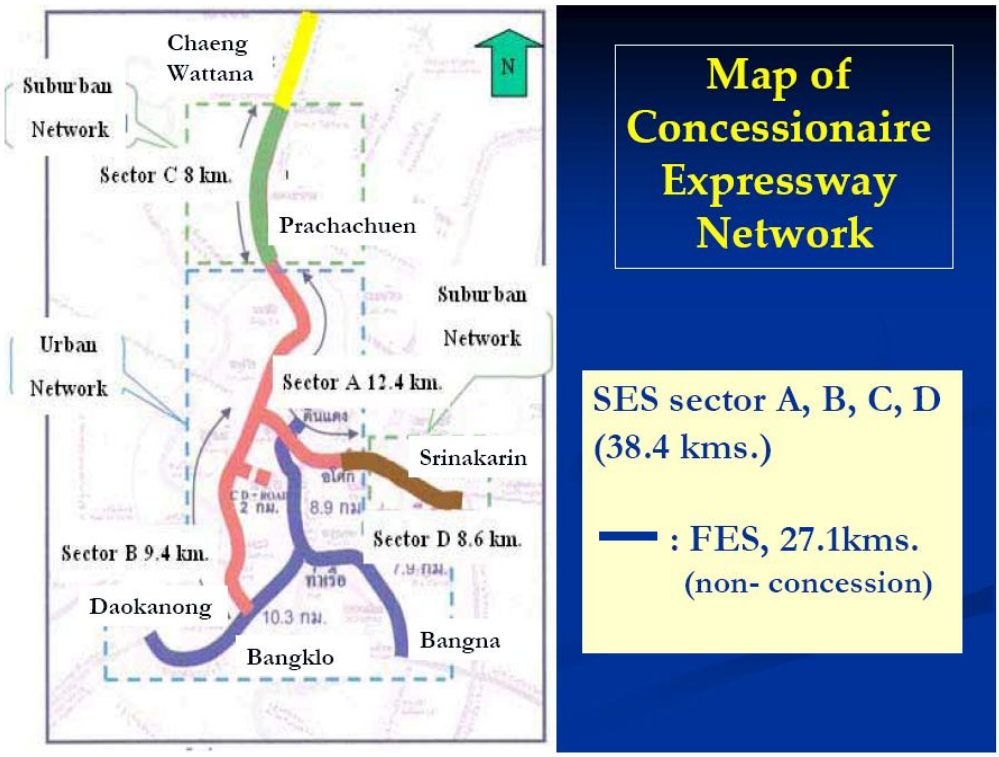



Figure 2.7 Accessing Route of Second Stage Expressway (Awakul, 2009)

General Points, Missing Points and Evaluation of the Project:

SSE was the first infrastructure project in Thailand built with B.O.T. model and management of the project was innovative. It came out without a government guarantee and was Thailand's longest and largest financing. The Expressway and Rapid Transit Authority of Thailand (ETA) was unable to build the second

expressway because of financial constraints. As a result the Thai government turned to the idea of B.O.T. as the financing method for the second expressway ("Privatization of", 2009).

The government did not implement the staged toll increase plan. By the time the system was to start operation in March 1993, the cabinet decided that a sharp increase in the tolls was unreasonable and could be politically inexpedient. Such a rate would reduce the scheduled income of both BECL and ETA, thus compromising both organizations' financial viability. ETA would have lost its ability to cover its current costs, much less long-term debt and land acquisition burdens. The unwillingness of the government to follow through on the user-pays principle caused the original consensus surrounding the project to break down.

The private company Kumagai Gumi signed contract with ETA but no one knew the conditions. Thai people thought that increased tolls just mean extra profits for the operator and the lack of transparency has worked as an impediment to explain to the motorists that toll increases may actually be necessary (Wanisubut, 1999).

According to BECL officials and its bankers, the Thais could not focus on the fundamentals needed to make the project work, thus, several months of negotiations were unable to rebuild the consensus. Eventually the road was opened in 1994 but principal sponsor Kumagai Gumi sold its shares to a group of Thai banks and investors. The new investors accepted the deal but only as long as the government conformed by the original contract (Wanisubut, 1999).

The SSE can not be designated as a successful B.O.T. project. However, it was nearly destroyed by a loss of focus on the commercial user-pays principle. Also there were serious problems encountered due to political instability (Zhang, 2004). The public company has negatively affected operation period of the project.

### 2.2.7 Rostock Crossing Toll Road (Germany)

| | |
|---|---|
| **Location of the Project** | Project is between the federal motorway A 19 to the east and the federal highway B 103 to the west of Warnow River, including a tunnel structure crossing the river in Germany ("Tollink Secures", 2001). |
| **Duration of the Project** | Project planned between 1995 and 2001. The contract was signed in September 1996. At the end of 1999 the construction started. Construction period was between 1999 and 2003. Toll road opened to traffic on 12 September 2003. Concession period of the project is 30 years completion date ("Tollink Secures", 2001). |
| **Reasons to Implement the Project** | To allow drivers to avoid congested parts of the city and save journey time. The tunnel make a direct connection to suburbs on the western bank of the Warnow river where used to be only accessible by ferry ("Immersed Tube", 2001). |
| **Parties of the Project** | Private company is ITA-Bouygues joint venture. Switzerland based Prognos survey firm undertook numerous surveys to establish reliable traffic accounts and projections. Lead arrangers of the project are Deutsche Bank, Nord LB and KfW, finance guarantors are European Investment Bank ("Financial Close On", 2000). |
| **General Points of the Project** | This is the first toll road project in Germany which is financed and operated privately. Total length of Rostock Crossing Toll Road is 4km and total cost of the project is 215.000.000 EURO. A full traffic and revenue study was prepared (Eder, 2009). |
| **Missing Points of the Project** | When the tunnel opened for traffic in September 2003, the actual traffic and revenue were much lower than forecasted. The average toll rate was higher than the assumption. Furthermore, decline in the population in Rostock between 1996 and 2003 was underestimated (Boyce, Maunsell, 2006). |
| **Key Points of the Project** | To heightened traffic volume public sector encouraged automatic tolling and prepayment cards. New studies were prepared to find out the reasons for discrepancy between forecast and outturn traffic volume. There was no user compulsion, because other alternative roads can be used for free of charge (Boyce, Maunsell, 2006). |

Details of the project are also provided in Appendix-H. The tunnel of Rostock Crossing Toll Road is shown in Picture 2.9 and route of the toll road is also shown in Figure 2.8.

Picture 2.9 Rostock Crossing Toll Road ("Rostock, Germany", 2008)

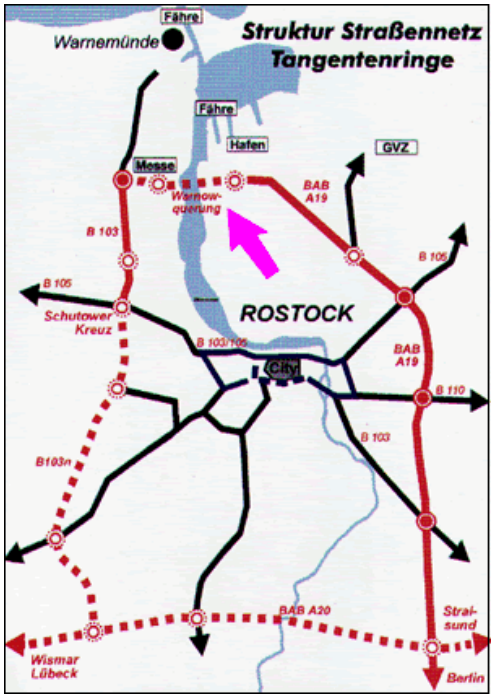



Figure 2.8 Accessing Route of Rostock Crossing Toll Road ("Tollink Secures", 2001)

General Points, Missing Points and Evaluation of the Project:

Rostock Crossing Toll Road is the first toll road project and the first realized German toll road project which is implemented by B.O.T. model ("Germany's First", 1998).

The 30 year concession contract between the Hanseatic town of Rostock and the project team assumes a capacity of 30.000 motor vehicles a day. This showed collected toll revenues will accumulate the necessary earnings for development, construction, financing and regular operating costs. However when the tunnel opened for traffic in September 2003, the actual traffic and revenue were much lower than forecasted. The average toll rate is higher than the assumption which may have resulted some reduction in traffic prepared to pay the toll. Also reluctance to pay a toll to travel is another reason for not to reach forecasted traffic. Furthermore, decline in the population in Rostock between 1996 and 2003 was underestimated (Eder, 2009).

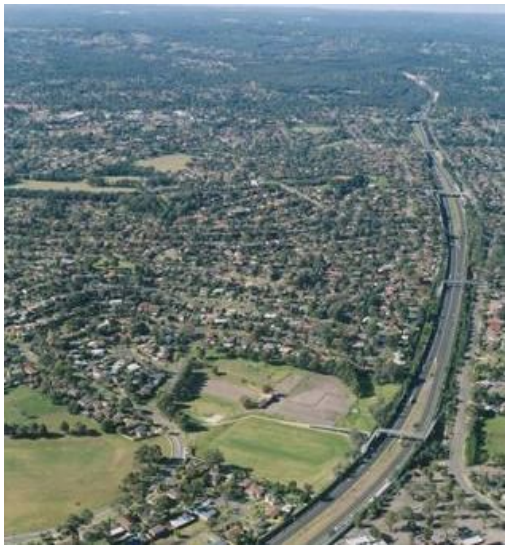
To raise actual traffic and revenue the public sector encouraged automatic tolling and prepayment cards by the use of a discount. Also new studies were prepared to find out the reasons for discrepancy between forecast and outturn traffic volume. Rostock government avoided to impose charges on toll road users. For this, officials explored fine-tuning toll options (Boyce, Maunsell, 2006).

Construction of this B.O.T. project was completed within the scheduled time but the operation period has not begun as successful as expected. As this project, the model for re-financing by collecting a user fee is especially suitable. But because the traffic volume was not calculated carefully, some problems have accrued from the beginning of the operation period. With the taken precautions about the traffic flow, this B.O.T. toll road is promising.

### 2.2.8 Hills M2 Motorway (Australia)

| | |
|---|---|
| **Location of the Project** | This project links the lower north shore and the northwest regions of Sydney, Australia (Shirbin**,** Utz, 1996). |
| **Duration of the Project** | The M2 opened to traffic in May 1997. Design and construction period of this project took 3 years. The concession period is 45 years (About Hills, 2009). |
| **Reasons to Implement the Project** | Motorway provides a direct link between the lower north shore and northwest Sydney. This project was developed to bypass the busy inner western suburbs. |
| **Parties of the Project** | The public sector is The New South Wales Government. The private company is Hills Motorway Limited. E-toll system of the motorway was supplied by AT/Comm. The long term loan was provided by a banking syndicate comprising Westpac Banking Corporation, Long Term Credit Bank of Japan and Credit Lyonnais (Shirbin**,** Utz, 1996). |
| **General Points of the Project** | Total cost of this project is 460.000.000.USD. This motorway is also fully electronic with no cash boots from December 2007 to assist with free-flowing traffic. The Government takes no market or operating risks. They are borne by the Private partners ("Case Study", 2009). |
| **Missing Points of the Project** | Because of growing of population addition of more on and off ramps at various points are necessary. It is thought that an upgrade of M2 would relieve existing congestion points and prepare it for additional growth ("Sydney M2", 2008). |
| **Key Points of the Project** | It is decided to add on and off ramps at various intersections with the M2 to improve traffic access and relieve traffic congestion ("Sydney M2", 2008). |

Details of the project are also provided in Appendix-I. General view of Hills M2 Motorway is shown in Picture 2.10 and route of the toll road is also shown in Figure 2.9.



Picture 2.10 Aerial View of Hills M2 Motorway ("Aerial view", 2001)

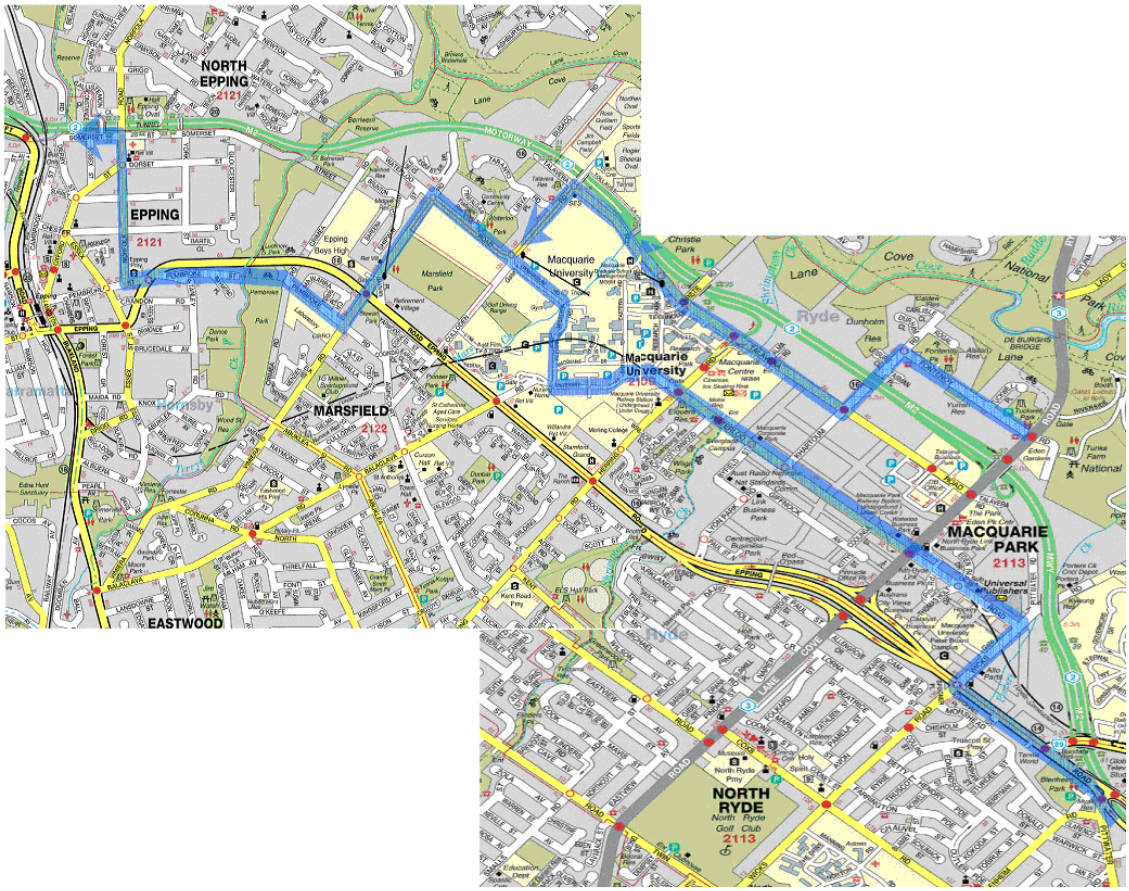



Figure 2.9 Accessing Route of Hills M2 Motorway ("Hills M2", 2009)

General Points, Missing Points and Evaluation of the Project:

It is a discussion topic to widen the parts of the motorway and addition of more on and off ramps at various points. It is thought that an upgrade of M2 would relieve existing congestion points and prepare it for additional growth, with 140.000 new homes and 100.000 new jobs planned for the north-west over the next 25 years. Also to provide direct access to and from M2 at Macquire Park and to improve traffic access and relieve traffic congestion additional on ramps and off ramps are necessary ("Sydney M2", 2008).

Another problem was 500m section of the motorway pass through a park. The government decided to make this part as a tunnel to assuage protest of the people ("Openning: Sydney's", 1997).

The M2 Motorway project is the first large financing of new infrastructure in Australia. With this B.O.T. project Australia institutional equity and debt markets have tried for the first time a significant way for an infrastructure project. And none of the market or operating risks were undertaken by the government. The project was implemented by B.O.T. model successfully. But now because size of the project has not been evaluated correctly, Hills M2 Motorway can not meet the demand.

## 2.3 DISCUSSIONS

Most of the toll road projects analyzed above are the first B.O.T. model projects of their own nation and each one is on vital position.

As shown above B.O.T. model is not only used for new projects but also repairing, maintaining and extension of toll roads like Dulles Greenway in USA and North Luzon Expressway in Philippines.

Toll road drivers want to pay tolls that vary by distance and time of the day. Also they want to travel fast and without pause for tolling. For example initial density of the traffic on the Dulles Greenway was 1/3 of anticipated. The public sector solved this problem by lowering the toll for non-rush hours and weekends, increasing the speed limit from 55mph to 65mph and establishing electronic tolling.

The support of government is the most important thing for B.O.T. projects to be successful. Just like M6 Motorway project, toll road was constructed within the predicted time with government support which is shown with sensible approach to the market or well arranged necessary permits and acquisition. Furthermore governments have to keep up control of the projects too. Otherwise private companies may intend their own benefits before the project's benefits which will cause the project to result in failure just as seen in ETR 407 Project. The major weakness of ETR 407 was the failure of the government to effectively transfer financing risks and also to sign extraordinary long term agreement with 99 year concession period. The private company had unlimited control of the highway and its tolls with this agreement.

In order to implement B.O.T. projects successfully it is important that previous similar projects must be taken as a sample such as M6 Motorway project.

One of the frequent problems encountered in B.O.T. toll road projects is quickly raised tolls. The other one is public opposition. Private companies usually begin repaying loans before collecting revenues. On the other hand toll roads implemented by B.O.T. projects have a dull time at the beginning of operation period. During this time traffic volume can be lower. Also when there are less well-maintained roads, travelers do not want to use toll roads with paying high tolls. This reduces traffic volume too. Companies which have not taken this dull period in consideration try to recover their loss with high increases in toll rates as seen in North Luzon Expressway, ETR 407, Second Stage Expressway or Rostock Crossing Tunnel. Again lack of detailed feasibility studies is the common problem of most of the projects above. With insufficient or inaccurate feasibility studies, traffic volume can be lower than estimated or unforeseen extra costs can appear. Unfortunately these extra costs are reflected on toll road tariffs. For example in North Luzon Expressway project in order to recoup project costs, private company needed to drastically increase the toll rates for the expressway. Again in Dulles Greenway the private toll road company faced difficulties in land acquisition. Thus land acquisition added to the cost of the project. Negotiations for land took time and additional resources were added to cost. To avoid high increases in toll rates public party has to take

precautions within the contract by determining annually toll increases just like done in N4 Toll Road project.

In some of these example projects mistakes were subsequently detected, tried to be compensated and future success of the projects were supplied. But in some of them unlooked mistakes mentioned above impede success of these projects. The obvious thing to do is to take lessons from former B.O.T. projects for the success of future B.O.T. projects.

# 3 IMPLEMENTATIONS OF B.O.T. MODEL IN TURKEY

## 3.1 PROJECTS IMPLEMENTED BY B.O.T. MODEL

There are many models to realize public services which have been used in Turkey since 1984 (Erdoğdu, 1997). In order to combine resources of public and private sector there are types of PPP models as:

- First method is to make public services with public investments,
- Second method is Build-Operate-Own (B.O.O.) agreements model,
- Third method is transferring only operating rights to the private sector to improve labor force,
- Fourth and more common method is Build-Operate-Transfer (B.O.T.) method.

To realize infrastructure projects Turkey needs a heavy finance just like other developing countries in the world. Turkish government gravitate to use B.O.T. model to realize these infrastructure projects because of insufficiency of government's internal source of money, delimitation of lending limit and difficulty of realizing projects by the government's own narrow budget. B.O.T. is an ideal alternative investment model for countries, such as Turkey, that have limited opportunity to take up a loan and do not have sufficient accumulation of funds (İmre, 2001). Detailed information about PPP models that Turkey has related legislation is also provided in Appendix-A.

In Turkey, B.O.T. model has been used in contemporary meaning since1984. Public investments were predominantly in 1980. However private sector investments began to be gravitated in 1984 for energy projects, in 1998 for transport projects and addition to these from 1994 to today for basic infrastructure projects. In 1994 legal structure established with the law about 'Implementing some services and investments within the framework of B.O.T. model'. Then opportunity to implement

more projects by B.O.T. model was secured with extension of scope of the law in May 2008 (Polatkan, V. 1997).

First legal arrangement about B.O.T. model application was accepted on December 4, 1984 with a state number of 3096. With this statute also private sector has an opportunity of generation, transmission, distribution and trade of electricity. Then motorway construction, maintain and operation opportunity was given to the private sector institutions in 1988 with the state number of 3465. And in 1994 with the statute about 'Implementing some services and investments within the framework of B.O.T. model', implementation of more infrastructure projects by B.O.T. model was accepted. To realize investments and services like bridges, tunnels, dams, water treatment plants, sewage systems, communication networks, power plants, mining ventures, factories and similar facilities, environmental pollution preventive investments, motorways, railways, underground and aboveground car parks, marines and airports; operation and transfer of them by B.O.T. model is in the scope of this statute. Detailed information about legal development of B.O.T. model in Turkey is also provided in Appendix-J.

As required by Turkish law, affirmative answer of State Planning Organization for a B.O.T project has to be taken. According to this, each government department may have a program of the projects that they intend to realize by B.O.T. model. And also tender documents of these projects have to be prepared.

As seen in Table 3.1 below, B.O.T. model is used to implement infrastructure projects about energy, mining, water and especially transportation areas which many people are consumer in Turkey. Because Turkey is dynamic, industrializing and urbanizing rapidly, B.O.T. model is mostly used for energy and transport sectors.

Table 3.1 Project Distribution According to Sectors Done by B.O.T. Model in Turkey by the Year 1998: ("Kamu Alyapı", 2006)

| SECTORS | PROJECT AMOUNT | PROJECT COST | |
|---|---|---|---|
| | | MİLYAR TL | MİLYON $ |
| ENERGY | 288 | 2.786.995,9 | 20.644,4 |
| MINING | 1 | 83,7 | 0,6 |
| TRANSPORT | 31 | 1.418.419,8 | 10.506,8 |
| HIGHWAY | 16 | 301.815,5 | 2.235,7 |
| RAILWAY | 4 | 837.000,0 | 6.200,0 |
| AIRWAY | 5 | 45.360,0 | 336,0 |
| HARBOUR | 6 | 234.244,3 | 1.735,1 |
| TOURISM | 27 | 35.047,4 | 259,6 |
| OTHER PUBLIC SERVICES | 1 | 0,0 | 0,0 |
| MUNICIPALITIES | 1 | 0,0 | 0,0 |
| TOTAL | 348 | 4.240.546,7 | 31.411,5 |

Also there are many projects which are done or planned to be done by B.O.T. model in Turkey as shown in Appendix-K.

There are very successful B.O.T. projects in Turkey besides projects which B.O.T. model applied inaccurate or incompetent. For example at İzmit Urban and Industrial Water Supply Project there was many difficulties encountered about applying B.O.T. model. On the other hand another B.O.T. project Atatürk Airport International Terminal is one of the projects which is world-famous and drawn a sample by the other countries. When they are analyzed in detail successful points and faults can be determined.

## 3.2 İZMİT URBAN AND INDUSTRIAL WATER SUPPLY PROJECT

| | |
|---|---|
| **Location of the Project** | Project is in Yuvacık on Kirazdere River, İzmit |
| **Duration of the Project** | At the end of the period from 1989 to 1996 it was decided to realize the project by B.O.T. model. Tender was in1989 the contract was signed in 1993. Yuvacık Dam was completed in 1998 and commenced operations at 18.01.1999. Operation period is 15 years and finishes in 2014 ("Yap – İşlet", 2002). |
| **Reasons to Implement the Project** | To meet drinking water requirements of stationary population in İzmit and near regions and to meet industrial plants' domestic water requirements for production in the same region ("Yap – İşlet", 2002). |
| **Parties of the Project** | Private company is GAMA Industrial Plants Production and Assembling Corporation. Operation right is given to a company called İSAŞ. The public sector is İstanbul Metropolitan Municipality (İ.B.B.) ("Yap – İşlet", 2002). |
| **General Points of the Project** | Project began with classical finance models but decided to be completed with B.O.T. model after the change of concerned legislation at 1994. Total cost of the project is 890.963.000 USD. |
| **Missing Points of the Project** | The most important problem of the project is high-cost, the unit price of water is high. Many procedures were against the legislation. None of the terms of the tender were applied to this project. In the feasibility report adverse conditions and inconvenience about implementing the project was warned. The public sector gave the project to İSAŞ irregularly and without taking any other offers from different companies ("Yap – İşlet", 2002). |
| **Key Points of the Project** | Government eliminated competition and abolished opportunity about comparison about cost of the project. Consequently public sector caused the project's total cost to be higher than similar projects. To complete this project by B.O.T. model is a political decision. Related government authorities tried to realize this project which was not adequate according to legal framework. |

General Points, Missing Points and Evaluation of the Project:

İzmit Urban and Industrial Water Supply project was planned to be completed by Public Waterworks Administration (D.S.İ.) with classical finance models but decided to be completed with B.O.T. model after the change of concerned legislation at 1994. Tender of Yuvacık Dam in the scope of the project was won by GAMA Industrial Plants Production and Assembling Corporation at 09.02.1987 and then the construction began. After that, at the end of the period from 1989 to 1996 it was decided to realize the project by B.O.T. model. At 27.12.2.1989 the government began to obtain offers for tender of the B.O.T. project and in 1993 Execution and Water Sell Agreement (USSA) was signed ("Yap – İşlet", 2002).

A feasibility report was prepared to complete the Izmit Urban and Industrial Water Supply project by B.O.T. model which was initially began to be implemented with classical finance methods by Public Waterworks Administration (D.S.İ.). On this account, Public Waterworks Administration (D.S.İ.) transferred all the components of the project and Yuvacık Dam to İstanbul Metropolitan Municipality (İ.B.B.). Construction of Yuvacık Dam was completed in 1998 and commenced operations at 18.01.1999. Ownership of the facility is İstanbul Metropolitan Municipality (İ.B.B.) but the operation right is given to a company called İSAŞ for 15 years. At the end of 15-year operation period, İSAŞ will hand over Yuvacık Dam back to İstanbul Metropolitan Municipality (İ.B.B.) at 2014. General view of Yuvacık Dam can be seen in Picture 3.1.

Picture 3.1 General view of İzmit-Su Dam ("Yuvacık Barajı'na", 2009)

Total investment cost of the project was shown 864.863.000 USD in USSA contract signed between İ.B.B. and İSAŞ joint enterprise at 24.08.1995. But this amount revised and raised to 890.963.000 USD at commence of operations date 18.01.1999. The most important problem of the project is high-cost. And at B.O.T. model total cost of the projects directly reflects on unit cost of the products. This problem distresses the community who are the buyers of these products.

It seems that from the planning period till the end of the project and also in the operation period, many procedures were against the legislation. Also none of the terms of the tender indicated in the related legislation were applied to this project. Actually, the scope of related legislation about the projects which can be implemented by B.O.T. model was not including İzmit Urban and Industrial Water Supply project. But this project has taken in the scope of B.O.T. model with approval of Supreme Planning Council (Y.P.K.). In fact at feasibility stage there were cautions as follows: ("Yap – İşlet", 2002)

- At the beginning of operation period external loan repayments would begin. This means repayments will begin before the revenues taken,

- Because of depreciation of TL against USD, unit price of purchased water will be higher than market price,

- And because the unit price of water will be high, water selling price has to be subsidized by government to avoid public reaction.

As it is seen, despite it was clear that troubles would be encountered, government insisted on completing the project with B.O.T. model.

Originally there were two purposes of İzmit Urban and Industrial Water Supply project. First one is to meet drinking water requirements of stationary population in İzmit and near regions. Second one is to meet industrial plants' domestic water requirements for production in the same region. The requirement of drinking water was fulfilled but nothing done for the second purpose. By this reason İ.B.B. tried to sell drinking water, which is more expensive, to industry plants. But they did not want to buy the drinking water instead of domestic water.

In the project there is a vice chairman to represent İ.B.B. in İzmit Urban and Industrial Water Supply project. The person who is the vice chairman is also shareholder of İSAŞ and GAMA. It means this person represents the public sector and the private sector at the same time and arbitrates sometimes by the name of public sector and sometimes by the name of private sector. So İ.B.B. as the client of the project could not fulfill responsibility of controlling the private sector. Besides, this project was given to İSAŞ joint enterprise without opening a tender. İSAŞ is one of the shareholders of GAMA. In the feasibility studies prepared by İSAŞ, total cost of the project without Yuvacık Dam cost was presented as 649.409.000 USD but real estimated price was 60.131.818 USD. İSAŞ joint enterprise won the contract however there was 11 multiple excessive price difference with their offer and the real estimated cost when the project was finished.

Table 3.2 Comparison of Similar Projects and Izmit Urban and Industrial Water Supply Project: ("Yap – İşlet", 2002)

| | Capacity (million $m^3$) | Dam | Transmission Line | Treatment Facility | Pumping Station | Total Cost (Million USD) |
|---|---|---|---|---|---|---|
| İzmit Urban and Industrial Water Supply Project | 142 | 56,3 | 287,3 | 142,8 | 25,7 | 512 |
| İzmir Tahtalı Drinking Water Project | 128 | 34,9 | 31,5 | 49,2* | | 116 |
| Diyarbakır Drinking Water Project | 95 | 117,9 | 51,5* | 42,5 | | 212 |
| İstanbul Yeşilçay System | 145 | | 76,3 | 41,3 | 16,6 | 134 |
| *Pumping Station included | | | | | | |

As shown in Table 3.2 above there is excessive price difference between İzmit Urban and Industrial Water Supply Project's transmission line and water treatment facility costs and similar projects. Client of the project İ.B.B. gave the project to İSAŞ joint enterprise irregularly and without taking any other offers from different companies. By this way İ.B.B. eliminated competition and abolished opportunity of comparison about cost of the project. Consequently İ.B.B. let the project's total cost to be higher than similar projects ("Yap – İşlet", 2002).

Another problem is İ.B.B. did not take into consideration about the points below before the tender was given:

- Analysis and evaluation of risks,
- Decision of which risks were going to be taken by the public sector and which ones will be transferred to the private sector,
- Research about whether the investment cost is realistic or not,
- Analysis of cost-benefit and how this analysis can effected the decisions about the project,

- Determining conditions of construction, operation and hand over and effects of these determinations on public benefit,

- Preliminary research and making connections for marketing produced water.

- Neither the approval of National Treasury (deemed as guarantor of the project) before signing B.O.T. contact, nor the approval of Supreme Planning Council after signing the contract, were taken ("Yap – İşlet", 2002).

In B.O.T. projects authorization of determining price of the production belongs to public sector party. But in this project İ.B.B. devolved this authorization to İSAŞ joint enterprise. With this authorization the private company reflected all expenses to water price even they are related with the produced water or not. This made water bills unnecessarily high.

In B.O.T. model all financial risks of the project are undertaken by the private sector. In consideration of this the public sector ensures to buy production or service with a stated price, for a stated time. In this project İBB burdened all expropriation expenses to the private sector, which had to be paid by İBB's own budged according to the conditions of contract. And because the private sector reflected these extra costs to water bills, these payments were effected encashment from the National Treasury, who is guarantor. Also İ.B.B. became a share holder of the contractor joint enterprise with 15% share and took up a 19.500.000 USD foreign loan with the guarantee of National Treasury. Because İ.B.B. did not repay these loans, National Treasury had to pay 20.200.000 USD with interest. The loan taken by İ.B.B. was repayed with the interest by National Treasury with the context of guarantee. But İ.B.B. did not pay any money to the National Treasury back.

It seems that the completion of İzmit Urban and Industrial Water Supply project by B.O.T. model is a political decision. Related government authorities tried to realize this project with branch of legal framework. Thus İzmit Urban and Industrial Water Supply which the first project done by B.O.T. model according to law with 3996 number was completed by many faulty procedures. The project which was initiated with classical methods by D.S.İ. is completed by B.O.T. model. However this was

inappropriate according to law. Thus, National Treasury burdened a big financial loan because of the reasons as:

- cost of produced water was high,
- water sale contacts with industrial enterprises and environs municipalities were not proposed on time,
- İ.B.B.'s financial situation was not good,

İ.B.B. could not execute liability of buying 142.000.000 m³ water per year from İSAŞ. Thus National Treasury had to pay 387.000.000 USD water price to İSAŞ in two years, upon the given guarantee. It is obvious that this payment will go on increasingly during the rest of the operation period ("Yap – İşlet", 2002).

As in this example, trying to implement projects by B.O.T. model however they are contrary to existing law and lack of necessary analysis can make these projects unsuccessful. As can be seen, benefits of these projects are under than expectations. As a result the public burdens all the distresses. B.O.T. model is necessary for Turkey. However, if projects are going to be implemented by this model, cost-benefit analyses of projects have to be done more sufficiently.

## 3.3 ATATÜRK AIRPORT INTERNATIONAL TERMINAL PROJECT

| | |
|---|---|
| **Location of the Project** | Atatürk Airport is 24km east far from the center of the İstanbul city of Turkey. |
| **Duration of the Project** | Construction was started in 1998 and completed in 1999. The B.O.T. contract has concluded on 2nd July 2005 ("Atatürk Havalimanı", 2006). |
| **Reasons to Implement the Project** | To ravel out Atatürk Airport's forward-looking capacity problem. |
| **Parties of the Project** | Client of the project is DHMİ (State Airports Authority), contractor of the project is TAV (Tepe-Akfen-Vie Joint Venture). Most part of the finance for construction of the project was covered by İş Bankası, rest was covered by Körfezbank, Vakıfbank and Hypo Vereinbank ("250 Havaalanı", 2006). |
| **General Points of the Project** | Total cost of the project is nearly 400.000.000 USD. With the largest total area, Atatürk Airport is the primary all around Europe. Airport is denominated as environment-friendly with its wastewater treatment, solid waste treatment and natural gas heating systems. The project has special noise pollution prevention, fire control and caution systems. ("250 Havaalanı", 2006) |
| **Missing Points of the Project** | At the beginning of the project there was authority confusion between the contractor, the bank and DHMİ as determining the administrator. Early on additional payment was done by DHMİ to TAV because number of passengers was lower than the guaranteed number in the contract. ("250 Havaalanı", 2006) |
| **Key Points of the Project** | International Terminal project is the fastest constructed terminal that was completed within 22.5 months (8 months earlier than confirmed date). Devastating earthquake at 17 August 1999 brought about remission of the construction works. In spite of the remission construction was completed earlier than predicted. Vehicles' main entering and exiting directions to the multi storey car park was planned as they would not cause traffic congestion. Initially there was authority confusion. However, in the length of time duties were described, the system has settled down and confusion has disposed. ("250 Havaalanı", 2006) |

Turkey has a strategic position and importance in international air transport. When Turkey's exterior deployment policy, developing exportation, tourism and geographical position is considered, air transport is the most important component for securing international relationship.

In Turkey B.O.T. model has began to be used to implicate private sector into the investments and services which require advance technology, financial strength and high quality resources. DHMİ (General Directorate of Airports Authority) conducts the assignment of operation of the airports, adjustment and control of the aerial traffic in Turkey. 37 airports in Turkey are operated under the terms of the DHMİ as shown in Figure 3.1. The Atatürk Airport International Terminal is one of the important projects that DHMİ has undertaken. A general view of Atatürk Airport can be seen in Picture 3.2.

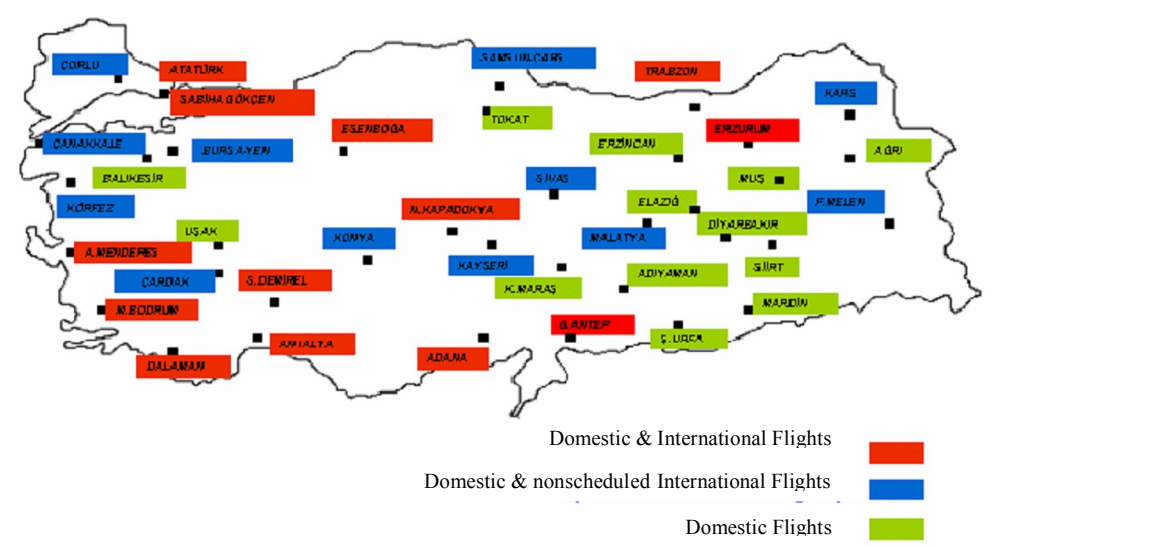



Figure 3.1 Map of Airports in Turkey ("Ulaştırma Operasyonel", 2007)


Picture 3.2 A view of Atatürk Airport ("Turkey-İstanbul", 2009)

Airport projects in Turkey which are implicated and operated by B.O.T. model are Antalya Airport 1. International Terminal & Additional Buildings and Atatürk Airport International Terminal & Multi-Storey Car Park projects.

Table 3.3 International Terminals Arriving & Departing Passengers ("Devlet Hava", 2009)

| **Year** | **Antalya Airport 1.International Terminal** | **Atatürk Airport International Terminal** |
|---|---|---|
| 1998 | 5.595.482 | - |
| 1999 | 4.213.501 | - |
| 2000 | 6.779.733 | 9.456.965 |
| 2001 | 8.638.634 | 8.827.732 |
| 2002 | 9.750.874 | 8.506.204 |
| 2003 | 9.756.180 | 8.978.268 |
| 2004 (End of October) | 12.283.229 | 9.381.860 |

In addition Dalaman New International Airport, Esenboğa Airport New Domestic and International Terminal Building and Adnan Menderes Airport New International Terminal Buildings had been actualized by B.O.T. model.

In the ‘Aerial Transport Study’ prepared in 1999, it was determined that from the beginning of 2000, to increase passenger capacity around İstanbul region some precautions had to be taken. Also before Atatürk Airport’s additional buildings were constructed; technical, administrative and juristic reports were prepared in detail by DHMİ Head Office. With the additional buildings, Atatürk Airport’s forward-looking capacity problem was raveled out.

Atatürk Airport is 24km east far from the center of the İstanbul city. İstanbul’s first airport which served military service before 1930 has opened to civilian purposed service in 1938 with the beginning of Ankara-İstanbul flights. Reasons below caused to gravitate to B.O.T. model as a new financing model for implementation of airport projects:

- Increase of the demands for the airports
- Increase of improving cost of the airports
- high priced lands
- high priced voice insulation precautions
- deficiency of existent finance models
- deficiency of inflow money from the general budged

Client of the İstanbul Atatürk Airport International Terminal project is DHMİ (State Airports Authority), contractor of the project is TAV (Tepe-Akfen-Vie Joint Venture), started construction in 1998 and completed in 1999. International Terminal project is the fastest constructed terminal that was completed within 22.5 months (8 months earlier than confirmed date in the contract). ("Atatürk Havalimanı", 2006)

About 1999 only a few companies could implement B.O.T. Model. B.O.T. construction and operation of a project by the same company with B.O.T. Model used to require a serious know-how. But the company TAV got ahead of it successfully. TAV (Tepe-Akfen-Vie) is a joint venture which was established by winning the contract. As the necessity of B.O.T. model a new company has to be

established if a project is going to be implemented with this model. TAV is established by this way. In 2004 Vie has broken away from TAV joint enterprise. Then new joint enterprise called again 'Tepe- Akfen-Venture (TAV) Airports Corporation' in July 2005. ("250 Havaalanı", 2006)

The B.O.T. contract was concluded on July 2, 2005. The company TAV operated the terminal from 10 January, 2000 to 2 July, 2005. After that, the bid opened for operation of B.O.T. domestic and international terminals of Atatürk Airport for the next 15.5 years. Tepe- Akfen-Venture (TAV) Airports Corporation again won the contract. Besides in this operation period, TAV restored facade of the Domestic Terminal to align it with the modern facade of new constructed International Terminal. ("Atatürk Havalimanı", 2006) General view of the airport is shown in Picture 3.3.

Picture 3.3 General view of Atatürk Airport ("Atatürk Havalimanı", 2000)

Bidding of the Atatürk Airport International Terminal & Multi-Storey Car Park project was done in 1997. The project was completed and opened in to service at the beginning of 2000 with B.O.T. model by TAV joint venture. Operation period is 3 years 8 months 20 days.

Devastating earthquake at 17 August 1999 brought about remission of the construction works. In spite of the remission, 30 month-construction period designated in the contract has finished in 22.5 months. Also 'Seismic Modernization Project' which was applied to terminal by the reason of 1999 earthquake has won American Engineers Council Academy's Signal Reward at 2002. ("Atatürk Havalimanı", 2006)

Construction, finance and operation of the building were implemented by B.O.T. Model. Capacity of the project is 14.000.000 passengers and includes 7000 vehicle multi storey car park. Total cost of the project is nearly 400.000.000 USD. ("Atatürk Havalimanı", 2006) Most part of the finance for construction of the project was covered by İş Bankası, rest was covered by Körfezbank, Vakıfbank and Hypo Vereinbank. ("Atatürk Havalimanı", 2006)

In 2001, TAV negotiated an amendment to their B.O.T. agreement with DHMİ to include an extension to complete International Terminal. Exchange for an extension to the period of time TAV would be allowed to operate the terminal in the agreement. Under the terms of the amendment, the terminal floor space has been increased by 30 percent and TAV's operating period was extended from May 2004 to July 2005. In May 2004, the extension construction of an airside and landside hotel and expanded VIP terminal facilities was completed. Additional building of Atatürk Airport International Terminal which was constructed and came into service in 2004 May has 85 room/112 bed-hotel especially used by in transit passengers. These additional facilities have heightened International Terminal's 14.000.000 passenger/year capacity to 20.000.000 passenger/year. Statistics of the passengers from 2002 to 2007 is shown in Table 3.4.

Table 3.4 Statistics of Passengers in Atatürk Airport ("Devlet Hava", 2009)

| Year | Total Passenger | International Passenger | Freight (ton) |
|---|---|---|---|
| **2007** | 23.196.229 | 13.600.306 | 734.820 |
| **2006** | 21.265.974 | 12.174.281 | 644.901 |
| **2005** | 19.293.769 | 11.781.487 | 615.909 |
| **2004** | 15.600.601 | 10.169.676 | 573.284 |
| **2003** | 12.104.342 | 8.908.268 | 502.692 |
| **2002** | 11.357.691 | 8.506.204 | 480.022 |

- (except in transit passengers)
- freight=baggage+cargo+mail

The TAV Airports Group also manages and operates the following airports under long-term B.O.T. contracts: Ankara Esenboğa Airport and İzmir Adnan Menderes Airport in Turkey; Tblisi Airport in the Georgian Republic.

İstanbul Atatürk Airport International Terminal is scattered in 186.000m² area. Multi storey car park is constructed on 179.500m² of this are. It is also Europe's biggest and the widest airport with its 280.000 m² mono block area. Vehicles' main entering and exiting directions to the multi storey car park was planned as they would not cause traffic congestion. Airport is denominated as environment-friendly with its wastewater treatment, solid waste treatment and natural gas heating systems. The project has special noise pollution prevention, fire control and caution systems. Besides more than 3500 engineers and architects, more than 3000 workers were involved in the construction and operation period. ("Atatürk Havalimanı", 2006) An aerial view of Atatürk Airport can be seen in Picture 3.4.

Picture 3.4 Aerial view of Atatürk Airport ("DHMİ Genel", 2009)

There were many variable parameters in Atatürk Airport International Terminal project. Initially there was authority confusion between the contractor, the bank and DHMİ as the administrator. Each one of the bank's control engineers, the administrator DHMİ and Turkish Airlines (THY) had some interference in the project. Also TAV requested authorization. However, by the time duties were described, system was settled down and confusions were disposed. ("250 Havaalanı", 2006)

Construction of the project was finished approximately 8 months ahead of schedule. Thus operation period started earlier. This initial development, along with the subsequent Terminal Building Extension Project was a huge step forward for the Turkish tourism industry.

## 3.4 DISCUSSIONS

When two projects above are analyzed, it can be seen that one successful and one unsuccessful denominated B.O.T. projects are implemented in Turkey nearly at the same time. The basic difference between these two projects is that one of them applied all of the procedures of B.O.T. model and other one was not adequate for implementing with B.O.T. model.

In Atatürk Airport International Terminal project feasibility studies were prepared in detail but in Izmit Urban and Industrial Water Supply project there is not any pre-study or investigation. Moreover cautions about troubles which may accrue if the project will be implemented by B.O.T. model have not taken into consideration. Therefore Atatürk Airport International Terminal project which is world-wide successful was completed 8 months ahead of scheduled despite earthquake but Izmit Urban and Industrial Water Supply project could not meet expectations. Also there were some defects or overlooked points in Atatürk Airport International Terminal project. But with a serious approach these problems were solved soonest and did not impede success of the project.

Public sector can not realize required projects for public necessity because lack of know-how and finance. However these projects can be implemented in a short time by private sector as seen in Atatürk Airport International Terminal project. Similarly Gebze-Orhangazi-İzmir Toll Road Project is a typical project that proposed to be executed for nearly 20 years and decided to be completed by B.O.T. model. Mistakes and achievements of the sample B.O.T. projects given above can facilitate to realize Gebze-Orhangazi-İzmir Toll Road Project by B.O.T. model successfully.

# 4 CASE STUDY: GEBZE-İZMİR TOLL ROAD (GİTR) PROJECT

## 4.1. GENERAL INFORMATION ABOUT GİTR

Many B.O.T. projects have been implemented as yet and a great many are planned to be implemented in Turkey. However there are many examples in other countries, Turkey does not have a large scale toll road carried out by B.OT. model. Gebze-İzmir Toll Road (GİTR) is a B.O.T. project that Turkish government aims to realize for more than 20 years.

Area where the GİTR project will be constructed has a heavy vehicular traffic. For crossing the İzmit Bay and nonstop travelling from İstanbul to İzmir, GİTR project is required. Economical condition of Turkey is not adequate to effectuate this project by national budget. Thus it was decided to implement the project by B.O.T. model just like toll road examples in many other countries. By this way, GİTR project which is a public necessity is decided to be realized with private sector finance and manpower ("Köprü Projeleri", 2006).

| | |
|---|---|
| **Location of the Project** | Toll road extends from Gebze to Orhangazi by crossing the İzmit Bay with bridge. Bay crossing bridge within the project is between Dil Wharf and Hersek Mull ("İzmit Körfezine", 2008). |
| **Duration of the Project** | First tender was in October 1997. Second tender was opened at 2001. Third tender was planned to be done at 7 October 2008 then it was postponed to 18 December 2008. Finally third tender was opened at 9 April 2009. Construction has not started yet. Concession period is approved as 22 years 4 months. It is planned that 7 years of this time is planned to be construction period ("İzmit Körfezine", 2008). |
| **Reasons to Implement the Project** | With GİTR and side roads Three large cities of Turkey: İstanbul, Ankara and İzmir will be connected by more safe transport network. Saving of time and expenses will be provided. With GİTR, excessive demand of vehicle carriage, long queuing lines and distresses will be decreased at ferry-boat harbor. |
| **Parties of the Project** | Public part of the project is General Directorate of Highways. Pivate Company is Nurol-Özaltın-Makyol-Astaldi-Yüksel-Göçay Consotium ("İzmit Körfez", 2009) |
| **General Points of the Project** | This is the biggest B.O.T. project of Turkey. İzmit Bay Bridge will be the second longest suspended bridge of the world. There is no public sector subsidy. All obligations about the toll road are undertaken by the private company ("İstanbul- İzmir", 2008). |
| **Missing Points of the Project** | In Turkey there is not a former constructed B.O.T. toll road to draw a sample for GİTR project. There is not a satisfactory feasibility report for GİTR and side roads project. This project could not be realized for more than 20 years because of economical crisis, earthquake, revision of the project for several times and changes in legislations ("İstanbul-İzmir", 2008). |
| **Key Points of the Project** | Estimated Toll revenues heightened from second tender to third one. To avoid opposition of travelers the government declared that divided road which is an alternative to GİTR will be finished before the toll road. Also ferry-boats will go on working as an alternative for GİTR. To meet the demand of the contractors railway lanes expunged from the project because they burden extra cost (Bağdiken, 2009). |

**Location of The Project:**

GİTR project will begin from Gebze and reach to Orhangazi by crossing the İzmit Bay with bridge. Then toll road will cross Bursa, go through Balıkesir and end at İzmir. Also Figure 4.1 below shows the route of the project ("İzmit Körfezine", 2008).

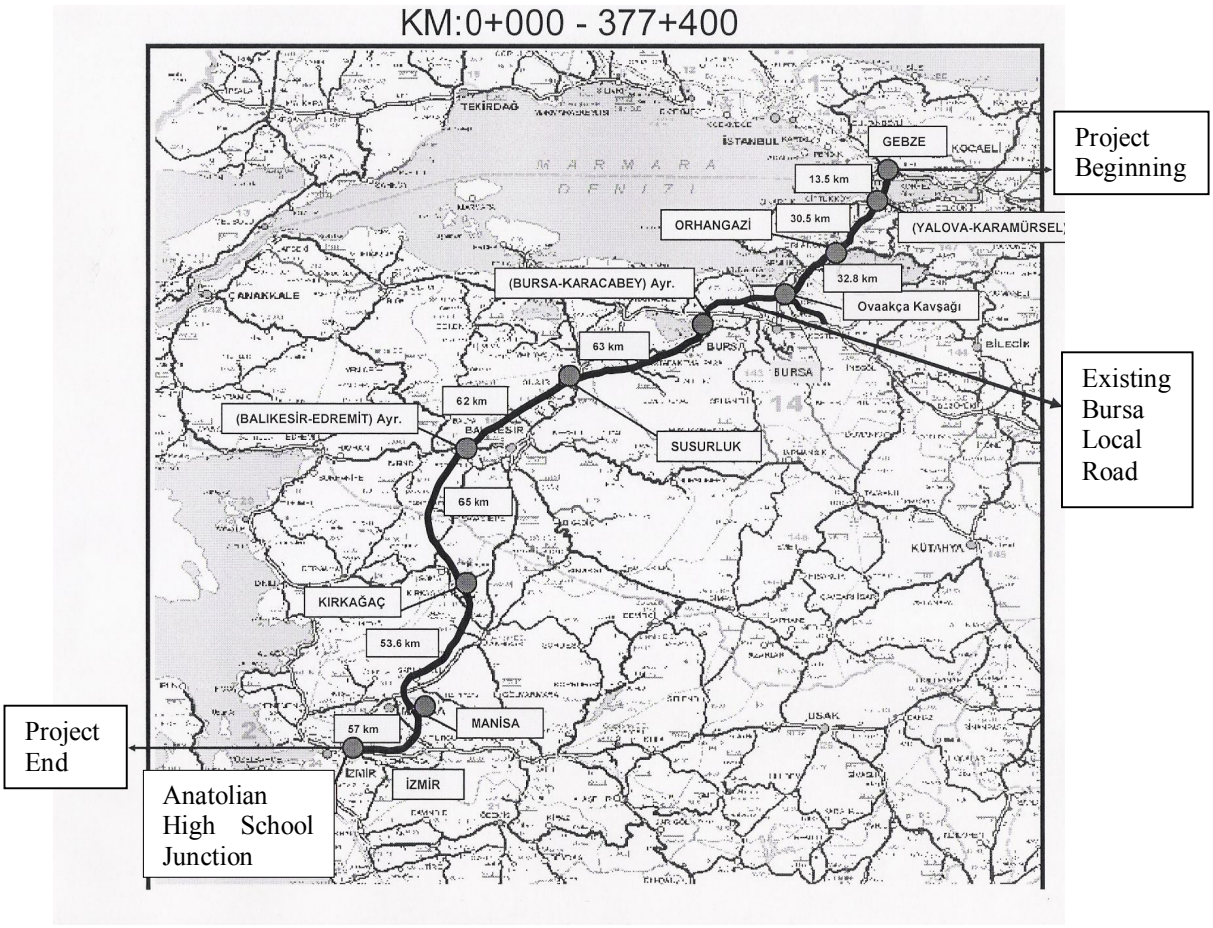



Figure 4.1 Gebze-İzmir Toll Road Accessing Route -Except Bursa Local Road- ("Gebze-Orhangazi", 2008)

Bay crossing bridge is planned to be constructed between Dil Wharf and Hersek Mull because this place is the narrowest part of the bay as shown in Figure 4.2.


Figure 4.2 Location of İzmit Bay Crossing Bridge ("İstanbul- İzmir", 2008)

With detailed definition; GİTR project begins from Dil Wharf in Gebze, comes up to Hersek Mull in Yalova city by Bay Transition Bridge, links to existing Bursa local road, at the end of Bursa local road toll road begins again at the junction of Bursa-Karacabey and ends at İzmir Anatolian High School junction. Total length of the project is 421 km; 376.4 km of the project is motorway, 3 km of the project is bay crossing bridge and the rest is connection roads. In addition followings are in the scope of the project:

- Parking area per 20 km
- Filling station per 50 km
- Recreational facilities per 200 km
- Construction and operation of box offices at connection roads ("İzmit Körfezine", 2008).

**Duration of The Project:**

GİTR project has been opened to tender three times. Principle applied in these tenders is, giving the tender to the bidder who satisfies specification requirements and stipulates to finish the works in the shortest time. Project was opened to two international tenders before by B.O.T. model. Toll prices and minimum vehicle

guarantee are determinate in these tenders. Bidding processes the project got through are viewed below:

First Tender:

First tender of the project was in October 1997. The England-Turkey-Japan (AJTC) Consortium won the tender with 49 months project completion period. Estimated total cost of the project was 180.00.000 USD. At this tender 230mt height suspension bridge for crossing the bay was planned to be constructed on to two lands within the sea over 70mt height. Total cost of the project of suspension bridge with 6 lanes motorway and 2 lanes railway, was estimated 320.000.000 USD. Toll price per vehicle was designated 11 USD. Bay Crossing Bridge and side roads construction were decided to be completed in 2000 ("İstanbul- İzmir", 2008).

However conditions were agreed AJTC Consortium who won the tender did not come to sign the contract ("Izmit Bay", 2001-2003). Thus, this tender was abolished at 2001. The probable reasons of abolishing the tender are; the private company (AJTC Consortium) could not supply required loan or AJTC Consortium anticipated oncoming economic crisis and declared off taking the project. After the earthquake at 1999 demolished regions where the bridge was planned to be constructed, the project was shelved for a long time.

Second Tender:

Second tender was opened at 2001. Only two private companies participated in this tender. One of these companies could not be prequalified. The other company, French Bouygues and Turkish Vinsan Group Joint Enterprise, backed out 1.448.000.000 USD offer ("Köprü Projeleri", 2006).

Third Tender:

Third tender was planned to be done on the 7th of October 2008. But before the tender some modifications were made within the specifications: ("İzmit Körfez", 2008)

- Highway and bridge crossing prices were restated. For the year 2008 stated prices are:

  - ✓ For cars; initial toll price for motorway 0,035 TL/km; for crossing İzmit Bay Bridge 45 TL (except VAT)

  - ✓ For lorries and buses; initial toll price for motorway 0,056 TL/km; for crossing İzmit Bay Bridge72 TL (except VAT)

These initial prices stated in 2008. These prices were going to be raised according to index of inflation. By this way the operator company would not have a chance to define any toll prices unilaterally.

- Gebze-Bursa part of the project was divided into 4 different sections and traffic guarantees were reordered. Guarantee for Gebze-Orhangazi section 40.000 vehicles, for Orhangazi-Bursa (Ovaakça) section 35.000 vehicles, for Karacabey junction (Bursa-Balıkesir) 17.000 vehicles and for Balıkesir Edremit junction (İzmir) 23.000 vehicles per year were promised.

- 2 lanes railway, that predicted to cost 500.000.000 USD, was expunged from İzmit Bay Crossing Bridge project.

- Construction, maintenance, reparation and operation periods of the projects were increased from 66 months to 84 months.

- The corridor to reach Izmit Bay Bridge and Hersek Mull was revised because historical artifacts were found at Hersek Mull.

- Payments from the private company to the technical and legal consultant company who controls the project during construction and operation period were reduced to 2,5% of total cost of the project.

By the reason of these revisions, tender of the project was postponed on the 18th of December 2008. Scope of the legislation about B.O.T. model revised in January 2008. Railway, motorway, divided roads, sea side facilities, dam and irrigation water facility projects are included in this model with this revision. Thus, the opportunity to add additional facilities on the route within the tender has occurred. Furthermore, the

railway lanes were expunged from the project with the request of bidders because of the high cost ("İstanbul- İzmir", 2008).

Previous tenders could not include side roads of GİTR. This caused uneasiness on bidders. Without side roads and additional facilities the toll road could not be used effectively. This may cause decrease on the number of passing vehicles from the Bay Bridge. For this project General Directorate of Highways gives guarantee for number of passing vehicles. Current estimated total cost of the project is 6.000.000.000 USD ("İzmit Körfez", 2009).

Because of the global financial crisis contractors requested from the government to make the conditions more attractive. Whereupon General Directorate of Highways made harmonization in favor of contractor companies about toll rates, credit assurance and expropriation expenditures. By the reason of this harmonization the third tender which was planned to be done on the 18th of December 2008 was postponed on the 9th of April 2009.

Finally proposals for last tender were taken on the 9th of April 2009. According to last specifications ceiling price to pass İzmit Bay for cars is heightened to 30 USD and toll price for toll road per km is heightened to 0.05 USD. Concession period of the project is approved as 22 years 4 months. It is planned that 7 years of this time will be construction period ("Parası belli", 2008). General Directorate of Highways has approved the private consortium who is the preferred bidder. Now the approval of Supreme Planning Council is awaited to commence the project ("İzmit Körfez", 2009).

**Resons to Implement The Project:**

With GİTR and side roads with İzmit Bay Crossing Bridge (except Bursa local road), İstanbul-Bursa-Ankara and İstanbul-Balıkesir-İzmir will be connected to each other by highway network. Toll road accessing route is shown in Figure 4.3 ("İstanbul-İzmir", 2008).

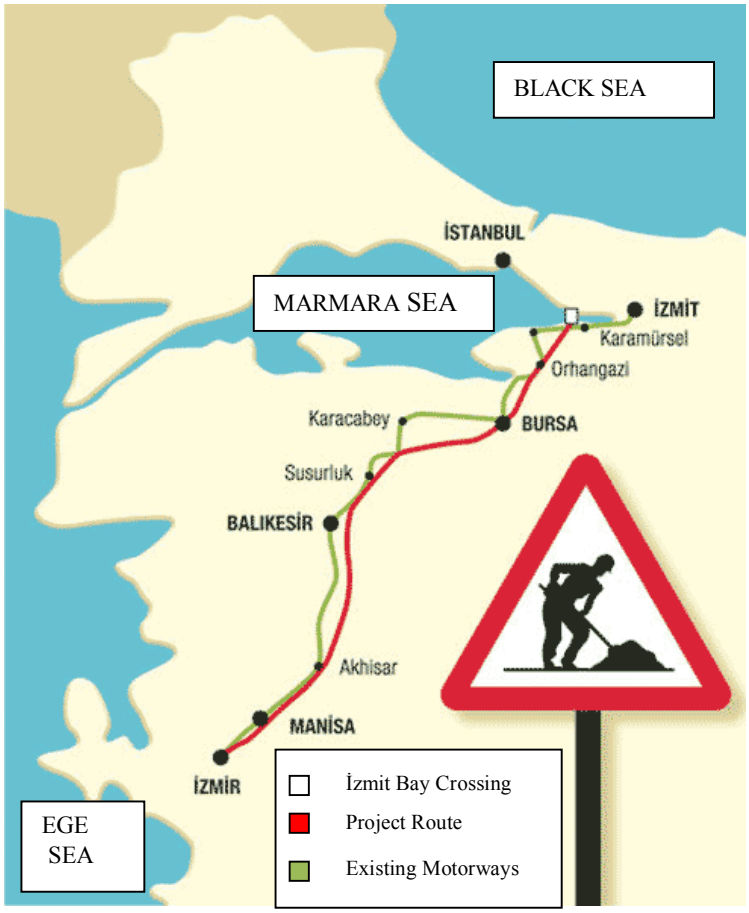



Figure 4.3 Gebze-İzmir Toll Road Accessing Route ("Parası belli", 2008)

When GİTR is completed:

- 7 hour-long distance between İstanbul and İzmir will be 4 hour-long,
- 2.5 hour-long distance between İstanbul and Bursa reduced to 1.5 hour-long
- 1.5 hour-long distance to pass İzmit bay will be 6 minutes-long
- Travel route between İstanbul and İzmir will be140 km shortened.
- Saving of time and expenses will be provided.
- With shortening travel length and time annually 870.000.000 TL money will be returned ("İzmit Körfez", 2009).

The position of Dilovası (in Gebze, township of İzmit) improved rapid development of the İzmit city because it connects west and east side of Turkey. It is also on the route of international motorways as D-100 and TEM (Transit European Motorway). With rapidly industrialization and increase in tourism investments, excessive demand of vehicle carriage at ferry-boat harbor caused long queuing lines and distress on people. Density of the traffic increases day by day in İzmit. Thus toll road and bay bridge will facilitate development of İzmit city. This project will also effect on the economies of cities on the line of the travel too. All these reasons make the construction of İzmit Bay Crossing Bridge mandatory.

Consequently, when 3.3km length, 700mt width İzmit Bay Crossing Bridge and toll road is completed it will be the world's second longest bridge. In order to travel from İzmir or Bursa to İstanbul passengers will not have to wait in a ferryboat line and they also will not have to tour around 18 km bay (Bağdiken, 2009).

**Parties of The Project:**

Public part of the project is General Directorate of Highways in the name of Turkish government. At the last tender on the 9th of April 2009 two consortiums which are consisted of local and foreign companies submitted proposals to tender. Nurol-Özaltın-Makyol-Astaldi-Yüksel-Göçay Consortium has won the tender with the shorter 22 years and 4 months concession offer ("İzmit Körfez", 2009).

**General Points of The Project:**

The intention of the B.O.T. tender is, financing, project preparation, construction, operation, maintenance, reparation of GİTR with side roads and at the end of the contract period transfer of the facility to the government in operating condition, clear of debts and free of cost ("Gebze-İzmir", 2008).

General Directorate of Highways prepared constructional drawing of the part between Orhangazi to İzmir for previous tenders. However there is not any project prepared for other parts of GİTR. The bidders are expected to prepare constructional drawings of these parts. All obligations about the toll road like maintenance and insurance are also will be undertaken by the private company who becomes the

preferred bidder. For example expenses of accidents that damage the toll road will be undertaken by the private company.

Before the third tender, design of 4mt suspension bridge in Japan between Osaka and Pacific Ocean was taken as a sample for bay crossing bridge. It was also decided to pass İzmit Bay by a suspension bridge with two lane railways and three lane motorways. By this way, İstanbul will be connected to Bursa by B.O.T. motorway and railway as shown in Figure 4.4.

Figure 4.4 Design of İzmit Bay Crossing Bridge ("İzmit Körfez", 2008)

At the end of third tender the form of the bay crossing bridge is determined. The width of İzmit Bay Bridge will be 700m and total length of it will be nearly 3000m without railway. New design of İzmit Bay Bridge is shown in Figure 4.5.

Figure 4.5 New Design of İzmit Bay Crossing Bridge (Bağdiken, 2009)

**Missing Points of The Project:**

In Turkey there is not a former constructed B.O.T. toll road to take as a sample for GİTR project. In fact there is not a satisfactory feasibility report for GİTR and side roads project prepared before the tender. There is only a feasibility report sent by General Directorate of Highways to get approval of Supreme Planning Council.

Because of economical crisis in 1999 and in 2009, Marmara earthquake in 1999 and revision of the project for several times and changes in legislations GİTR project passed 3 tender processes up to date. Side roads were not in the scope of the project in former tenders. Side roads of this motorway must open to tender at the same time with the project because toll road can not commence operations without side roads. Thus scope of the last tender on the 9th of April 2009 involves side roads.

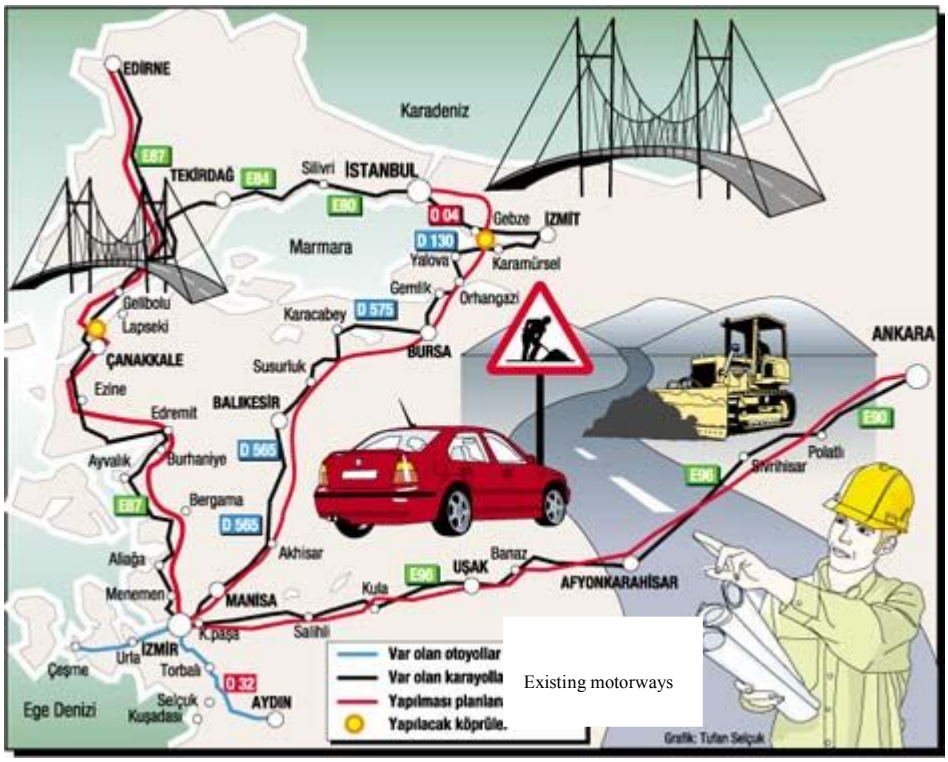



Figure 4.6 Existing and Planned Toll Roads and Bridges of Turkey ("En Büyük", 2009)

**Key Points of The Project:**

GİTR project will be implemented by 3996-94/5907 numbered Turkish law. In the interview with General Directorate of Highways the managers explained that a foreign toll road project has not taken as a sample for this project because every country's projects are implemented according to that country's laws. Also there is not a consultant company for this project. When we look at examples in other countries general mistakes and successes of toll road projects done by B.O.T. model can be determined and taken into account to implement GİTR successfully.

There is not a satisfactory feasibility report for GİTR. There are different feasibility reports prepared by private companies who participate in the tender. All these reports are different from each other because view points of the parties are different. General Directorate of Highways prepared the feasibility report on the public benefit and advantages of the projects for the government. On the other side private companies prepared their own feasibility reports for initially to participate in the tender, then to get ready for the tender, to estimate tender price and to figure spiritual and material benefit of the project for the company. Because of this there is not a unique, common feasibility report of this project.

Estimated Toll revenues heightened from second tender to third one. In order to avoid complaints from the public General Directorate of Highways declared that divided road which is an alternative to GİTR will be finished before the toll road. Furthermore, people who are unwilling to pay tolls can use transportation with ferry-boat as another alternative to GİTR and İzmit Bay Bridge.

Motorway projects implemented by B.O.T. model are different from other projects realized by this model. Motorway projects require big investments and return of these expenditures take long time. After the motorways finish and commence operations, usually there is a stagnant period that amount of the vehicles passing from the toll road are lower than estimated. However, repayment of the loans even, the longest term one, begins after 10 years. Also GİTR Project which will be constructed at the most required region and will be most widely used still could not be implemented despite it has opened to tender two times before. Because most part of the finance of this project is loan from foreign banks, economic crises that Turkey

came through caused to fail the purpose of implementing this project too. The contractor companies found it difficult to acquire the loan because of the high total cost. Nevermore it is not possible to open 421 km length GİTR Project piecemeal. Because, if the İzmit Bay Bridge which has the highest rate of return in the operation period is detached from the other parts, rest of the project would not be attractive for investment companies. In other words if we assume the GİTR as a necklace; İzmit Bay Bridge is the precious jewel in the middle of this necklace.

GİTR is a long, comprehensive and high cost project even without the railway. Because this extra cost discouraged the bidders, railway lines were expunged from the project. Another reason is there is no toll collection in railway however toll can be collected by each car at motorway. Thus project is revised. At the last tender stage General Directorate of Highways extended 180 days to 6 months which is given to the private companies to supply the loan of the project. Government also extended construction period from 66 months to 84 months to attract more constructions' attention.

There is scarce constructed toll road project by B.O.T. model in Turkey. In the last 11 years there is not any tender of toll road projects. However for the next 5 years Turkish Department of Transport plans to implement 6 new motorways and 3 new bridges with alternative finance models as B.O.T. ("Gebze-Orhangazi", 2008).

## 4.2. DISCUSSIONS

With the revision of the legislation in May 2008 the scope of the B.O.T. projects widened and opportunity to implement some motorway projects with this model arised in Turkey. For example İstanbul, Ankara and İzmir which are three large cities of Turkey are proposed to be connected by more safe transport network with motorways. To realize such projects successfully, B.O.T. projects implemented in other countries can be analyzed, determined, mistakes of them can be taken into account and reasons that bring the project to success can be taken as sample.

Turkey does not have a toll road project implemented by B.O.T. model except Göcek Tunnel to draw a sample for case study Gebze- İzmir Toll Road project (Behar,

2008). Furthermore, the state has not taken assistance from a consultant for this project which was opened to tender several times before. For these reasons, many factors were failed to foresee, not taken into account, the tender has been postponed several times and the project still could not be implemented. The complications of GİTR projects until now are as followings:

- First tender of GİTR project was delayed because of earth quake at 1999 and economical crisis. All force major conditions which may effect on the project, have to be taken into account in detail for the success of B.O.T. projects.

- Basic decisions of GİTR project were not given at the beginning of the project as if the Bay Bridge will include railway or not. Furthermore, side roads which will effect directly on the traffic volume on GİTR were not included. Then railway lines were expunged from the project because market conditions were not evaluated. For the success of B.O.T. projects all decisions must be determined from the feasibility stage of the projects. For example in N4 Toll Road project, according to contract the tariffs are set jointly by both the public and the private companies, any errors in bidding or increases in construction price can not be offset by increases in tariffs. South African and Mozambican governments tried to obtain their citizens' confidence at the beginning with this decision.

- Revision of related legislation in the May 2008 also caused delay of the third tender. To avoid such a problem Turkey should have a unique B.O.T. legislation covering various PPPs for various sectors.

- One of the most important points for B.O.T. projects is government support. For example M6 Motorway project, toll road was constructed within the predicted time with government support from the beginning of the tender stage. Similarly with the support of Turkish Government as making conditions more attractive for private companies, last tender of GİTR project concluded successfully.

All these troubles show that necessary feasibility studies were not prepared for GİTR project and this project is not assisted by significant experienced advisers.

As seen in example B.O.T. toll road projects most common mistakes are followings. For the success of this project cases below also have to be taken into consideration:

- Initially it has to be decided if the project is appropriate for the implementing by B.O.T. model.
- Necessary permits and land acquisitions have to be well arranged.
- Properties of the toll roads have to be attractive to avoid demand risk and public opposition. Also future demands of the users have to be evaluated.
- A detailed contract has to be prepared to overcome conflicts in the future. Annual toll increases also have to be determined within this contract.
- Detailed feasibility studies have to be prepared by the public sector. Attitude of drivers, their unwillingness of paying tolls and potential traveler quantities have to be ascertained carefully.
- The private companies have to pay attention that there is an extremely large levered debts and a long time frame before profitability in B.O.T. toll road projects.

New highway projects are planned to be realized by B.O.T. model as GİTR project (Behar, 2008). This project is very important for Turkey because it will be taken as a sample for the future projects. Analyzing the points above and benchmarking B.O.T. model can provide the future success of GİTR project.

# 5 CONCLUSIONS

B.O.T. model has come into existence with the need of public requirements that governments can not realize with their own budget and resources. This is an alternative financing model recently used in Turkey and many other countries. With amendment of B.O.T. legislation in May 2008, many projects which were out of the scope of the model were also included. By this way B.O.T. model is countenanced and attention of private sector is attracted.

In Turkey there were some mistakes in the application of B.O.T. model until now. To avoid these problems in future B.O.T. projects the points below have to be taken into consideration:

- In some cases inaccurate feasibility reports which were prepared by private companies were accepted. In some projects, companies have taken upwards of the total cost shown in their feasibility report however projects were completed with a cost lower than stipulated just like İzmit-Su Project. Some facilities implemented by B.O.T. were realized without a tender and contract was signed without taken proposals from other companies. Supply-demand equilibrium was not considered. To avoid these problems required researches or feasibility studies must be prepared. When these studies are prepared by different private companies, different feasibility reports cause disorder. Also in large scale projects high costs of these studies discourages private sector. These feasibility studies have to be prepared by government before tender to avoid the cause.

- B.O.T. projects have to be implemented within a schedule according to their priority and urgency. These projects must put out a tender and there must be pre-election of submitted proposals.

- Equilibrium between public and private parties must be well established in the projects implemented by B.O.T. model. Initial decisions must be specified in a detailed contract.

- In projects implemented by B.O.T. model major consumers of the product or service is public. Therefore at the stage of determining price of the product or service not only market conditions, but also other factors such as the relevant laws and contractual terms and consumer purchasing power should be taken into consideration. As shown in similar projects this is one of the most important points that carry the B.O.T. projects to success or failure.

- In Turkey, there is large number of laws that regulates different public private partnership models for different sectors. Preparation of a law covering all sectors and enables to use various public-private partnerships is necessary. Each ministry has to schedule the projects which will be implemented by B.O.T. model and tender documents of these projects should be prepared by the related ministry.

- To provide public requirements quickly and properly, B.O.T. model should be improved and adopted as one of the main development strategy of Turkey. Projects which will be realized by B.O.T. model should be inspected in detail to avoid being exploited by those who look for self-interest.

- One of Turkey's biggest problems is missing information and experience in B.O.T. Unfortunately the state does not take advice from professional consultants for new B.O.T. projects such as GİTR project.

In developing countries there are political and economic uncertainties. Furthermore because of the reasons as quality and high cost, projects which will be implemented by B.O.T. model have to be carefully analyzed. Model can ensure success if it is used for accurate and appropriate projects. With overcoming these deficiencies about implementing B.O.T. model and with taking lessons from previous B.O.T. projects, new projects as Gebze - İzmir Toll Road project can be implemented by this model successfully.

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# 7 APPENDIXIES

## APPENDIX A

**Public Private Partnership Models that Turkey has related legislation:** (Tekin, 2007) ("Kamu Alyapı", 2006)

Turkey is one of the primal countries that have applications about public private partnership models from 1980s.

Build-Operate-Transfer Legislation

- 3996 numbered law about 'Implementation of Some Investments and Services Within the Framework of Build Operate Transfer Model' and 94/5907 numbered judgment relating to this law.
- 3096 numbered law about 'To Commission Enterprises Except Turkish Electricity Administration for Production, Transmission, Distribution and Trade of Electricity' and four regulations relating to this law.
- 3465 numbered law about 'To Commission Enterprises Except General Directorate of Highways for construction, maintaining and operation of motorways and 93/4186 numbered regulation relating to this law.

B.O.T. model has entered into Turkish legal system with 3996 numbered law about 'Implementation of Some Investments and Services Within the framework of Build Operate Transfer Model'. Project types that B.O.T. model can be applied are construction, operating and transfer of followings: bridge, tunnel, dam, irrigation, drinking and potable water production facilities, water treatment facility, canalization, communication, electricity production, transmission, distribution and trade facilities, mining, factory and similar facilities, environmental pollution preventive investments, motorway, railway, underground and over ground car parks, seaport and airport projects.

After the amendment of 3996 numbered law at 08/06/1994, B.O.T. projects will be liable to special legal judgment and for solution of conflicts national and international arbitration courts can be selected to apply.

Semi Build-Operate-Transfer Legislation

In B.O.T. projects public sector doesn't finance the contractor private company, only stipulates to purchase a part of the production or services. If the public sector has to finance the contractor private company with the reasons as followings, these projects are called Semi B.O.T. projects:

- If the government breaches of stipulations because of its political decisions,
- If the private company falls into embarrassed position by the reason of the government's mistakes,
- If there are difficulties because of economic crisis,

With law enacted in 2008 about 'Implementation of Some Investments and Services With the Framework of B.O.T. Model' the government will pay contributions to the private sector in the conditions that users are not able to pay the price of production or services generated by B.O.T model. These kinds of projects will be implemented by Semi B.O.T. model.

Build-Operate Legislation:

- 4283 numbered law about 'Establishment and operating of Electricity Production Facilities by Build-Operate Model and Arrangement of Energy Sales' and 97/9853 numbered regulation relating to this law.

Build- Operate (B.O.) Model has come into our system by 16.07.1997 dated and 4283 numbered law about 'Establishment and operating of Electricity Production Facilities' and the law about Energy Sales by B.O. Model. This model is for construction and operating of energy production facilities which belong to the investors.

With this model investors have the opportunity of construction and operating of only thermal power plants. Hydroelectric power plants, geothermal energy plants, nuclear energy plants and other power plants working by renewable energy resources are not within the context of this law. Because this model was restricted by one subject it has been applied to fewer projects in Turkey. Pursuant to the 4283 numbered law, agreements signed in the scope of this model are arranged by private law rules and for dispute resolution international or national arbitration court can be applied for.

Build-Hire-Transfer Legislation:

- 5396 numbered law about 'Additional Clause to Health Services Basic Law' and 2006/10655 numbered regulation relating to this law.

Build-Hire-Transfer Model has come into our system with the amendment of Health Services Basic Law at 2005. This model can only be used for health services. Ministry of Health allows the investors to construct health facilities hired by ministry onto the public real estates. Except health services, all services relating to these facilities are provided by the private sector. Because there is no private arrangement about the law which applies and competent court; contracts within the scope of this model are contracts governed by public law. For dispute resolution court of administration is the competent authority.

Transfer of Operating Rights and Long Term Hiring Legislation:

- 4046 numbered Privatization Law
- 5335 numbered Law

(This is the law that delegates State Airports Administration to hire its airports partially or completely for a long term or transfer of its operating rights to the private sector.)

In scope of this model administration transfers operating rights to private investors for a definite period with specific circumstances. This model is regulated with 4046 numbered law about Privatization Practices and 3096 numbered 04.12.2984 dated law about Authorization of Associations Except Turkish Electricity Administration for Production, Transmission, Distribution and Trade of Electricity.

With this model right of property is not transferred, only operating rights of a specific service are transferred to the private sector. According to the clauses of 4046 numbered law Privatization Administration can apply other models according to the characteristics of the public service and requirements of the project.

Sectors That Existing Legal Substructure Public Private Partenerships Comprise in Turkey: ("Madenoğlu", 2009)

- ENERGY
  - Production, transfer, distribution and commerce of electricity
  - Dams
  - Natural gas plants
  - Wind power plants
  - Hydroelectric power plants
- TRANSPORTATION

  AIR TRANSPORTATION
  - Airports

  MOTORWAY TRANSPORTATION
  - Motorways and Tunnels

  SEAWAY TRANSPORTATION
  - Superstructure facilities

- Piers
- Harbours

RAILWAY TRANSPORTATION

- Railway and station buildings

INNER CITY TRANSPORTATION

- Land route tube crossing

- AGRICULTURE
  - Irrigation
- DRINKING WATER, SEWERAGE
  - Drinking and using water
  - Treatment plant
  - Sewerage
  - Dam
- HEALTH
  - Hospitals
- TOURISM
  - Marinas
- GENERAL ADMINISTRATION
  - Border gates
- MINING
  - Mine and operating
- ENVIRONMENT
  - Environmental pollution preventive investments
- MANIFACTURING
  - Factories and similar facilities
- COMMUNICATION

## APPENDIX B

### M6 Motorway (Hungary)

Location of the Project:

M6 Motorway starts from south of Budapest near Erdi and ends at the intersection between the M6 and M8 motorways near Dunaujvaros in the Republic of Hungary. "The M6 motorway is part of the Trans European Network Corridor VI and will ultimately connect Budapest with the Hungarian-Croation border ("Refinance of", 2006).

Duration of the Project:

Contract signing and financial close were completed in record time: 7.5 months from issuing the innovation to tender; this is an outstanding achievement among projects of this magnitude ("Financial Close Reached", 2009).

The concession agreement was granted to M6 Duna in October 2004 for a period of 22 years, with a one time extension option, exercisable at the Minister's discretion. Thus construction works commenced in October 2004. Final completion according to schedule was September 2006. 18 months of the 22 year concession was construction period (Schlor, 2006).

Reasons to Implement the Project:

M6 Motorway is constructed to facilitate the local traffic and the movement of farm equipment. Also this project is vital for faster connection between Erd and Dunaujvaros and higher living quality for inhabitants of the villages. This project provides less noise, less vibration and pollution to the villagers. Furthermore local development through modern infrastructure and prime availability in the center of the country were rustled up by M6 Motorway.

Road management system of this motorway eases traffic supervision and improved conditions of the road. Also this motorway was constructed to match traffic capacity of the region. "Because B.O.T. model was used, operation & maintenance of the motorway by a private enterprise increased efficiency and generate cost saving (Schlor, 2006).

Parties of the Project:

The M6 Duna consortium consists of Bilfinger Berger B.O.T. GmbH of Germany and the Austrian construction companies Porr Infrastruktur GmbH and Swietelsky International GmbH. The group has been awarded a 22 year term concession to design, build, operate, maintain and finance the 58.6km section of the M6 Motorway ("Refinance of", 2006). See figure 7.1 below.

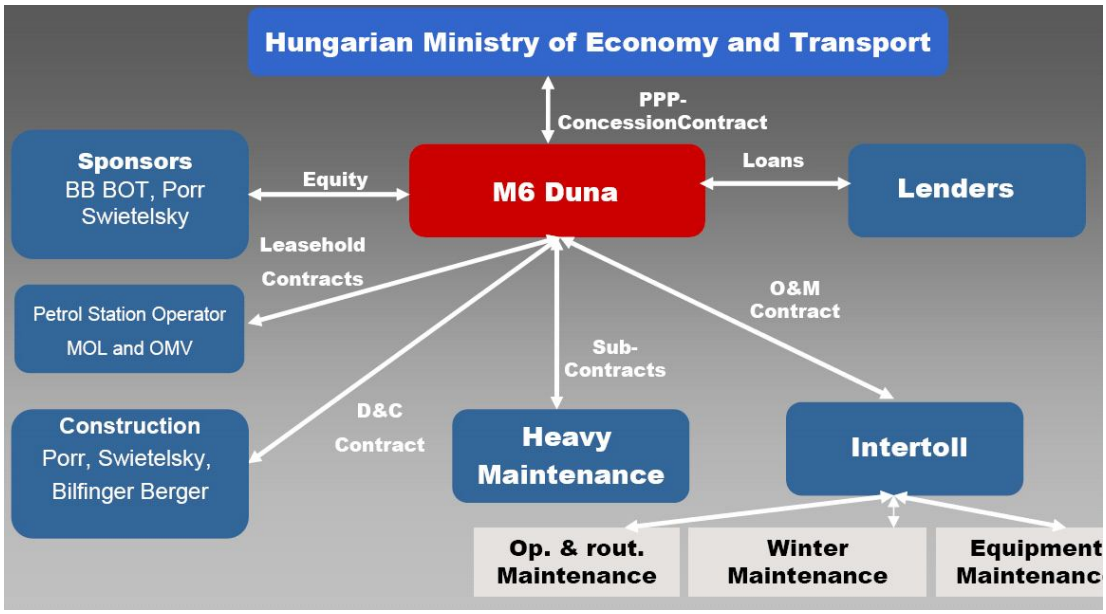



Figure 7.1 Relationships Between Parties of M6 Motorway Project (Schlor, 2006)

The financing was arranged and underwritten by Bayerische Landesbank, Commerzbank Aktiengesellschaft, KBC Finance Ireland, Kereskedelmi es Hitelbank Rt, KfW and Magyar Külkereskedelmi Bank Rt. BNP Paribas acted as financial adviser to the project company ("503m Hungarian", 2005). ING and Linklaters were appointed as financial and legal advisers respectively in January 2004.

General Points of the Project:

This project is the largest Hungarian Public Private Partnership (PPP) contract to date and has received Business of the Year Award from Project Finance International (PFI) Magazine for the Europe, Middle East and African region ("Financial Close", 2009). This project is ground-breaking because it represents the first new build road PPP project to be undertaken in Hungary.

Total cost of the project is 482.000.000 € ("M6 Motorway", 2009). The construction works consisted of:

- 58.6km motorway
- 10 interchanges
- One motorway that cross between the M6 and the M8
- Two complex and two simple rest areas in each direction
- Numerous side roads ("The Company", 2009).

## APPENDIX C

### The N4 Toll Road (South Africa& Mozambique)

Location of the Project:

N4 Toll Road is in this project which connects Pretoria (South Africa) to Maputo (Mozambique).

Duration of the Project:

The contract for the toll road project was tendered in 1996 by Build Operate Transfer model. A consortium of South African and Mozambican companies, was awarded the contract in December 1996 ("South Africa", 2009).

The concession agreement was signed in May 1997. To design, construction, upgrading, rehabilitation, operation and maintaining of the project are under the private sectors obligations. Also construction of five toll plazas and some other facilities are within the scope of the contract. In 2004 the contract was revised and the concessionaire's responsibilities were extended. The part between Witbank and Pretoria was added to the contract. However, the length of agreement was not changed (30 years beginning in 1997). Thus, after the 30 year period, control and management of the road reverts back to the governments.

Reasons to Implement the Project:

In 1995, the ministers of transport of Mozambique and South Africa met to discuss the development of transportation axis between the port of Maputo and the industrial center of South Africa (Gauteng Province). Neither countries had sufficient resources to invest in the failing infrastructure, but each one wanted to foster stronger transport and trade links ("South Africa", 2009). South Africa and Mozambique have developed a major infrastructure project which will increase the efficiency of product transport, sparking regional and global trade and provide additional economic opportunities to their citizens.

B.O.T. countries' basic philosophy was to create a favorable climate for investors and then encourage the private sector to improve infrastructure, create jobs, increase trade and further investment. Besides B.O.T. countries' objectives about N4 toll road project were:

- Develop tourism within the region,
- Further develop major exporting industries in the region,
- Reduce the cost and duration of the transportation, by improving the efficiency of roadways,
- Foster broader economic activity, empowerment and development of communities within B.O.T. countries,

- The opening up of South African markets to Mozambican producers and access to global markets through the development of Maputo Port. By this way foster trade between South Africa and Mozambique,

- Employment creation through increased economic activity in Maputo and along the Corridor, with the ability to shift to higher value-added industry sectors,

- Improved income generation through the encouragement of private investment ("South Africa", 2009).

Parties of the Project:

The South African Department of Transport (DoT) and Mozambican Department of Roads and Bridges (DNEP) together with their respective governments, entered into a Protocol Agreement in order to establish an Implementing Authority (IA) for the proposed cross-border toll road. The IA developed the necessary concession contract documents and initiated a tender process for the project. In addition, the DoT in South Africa created 'South African National Road Agency Limited' (SANRAL) and the Mozambican DNEP created 'Administração Nacional de Estradas' (ANE), which serve as the government authorities that oversee and provide public management of the N4 Toll Road ("South Africa", 2009).

After an open-bidding process, a consortium of South African and Mozambican companies won the contract. Trans African Concessions (Pty) Ltd (TRAC) is the Concessionaire has won the contract to build, finance, operate, maintain and expand the 630km N4 Toll Road between Witbank and Maputo. The sponsor shareholders, who together own 40% of the consortium, are two South African road contractors. And an international construction company that is one of the prominent road builders in the world ("South Africa", 2009).

General Points of the Project:

The contract for N4 Toll Road is for 3 billion Rand (1996 value=660 million USD) over 30 years, with a total of 1.5 billion Rand allocated for the initial 3.5 years. There was no government subsidies provided for this project ("South Africa", 2009).

Equity/debt percentage of this project is: 20/80%. The three construction companies who are the Sponsor Shareholders contributed 10% worth of equity, with rest of the capital provided by the South African Infrastructure Fund and six other investors. The debt investors include South Africa's four major banks and Development Bank of South Africa.

The toll money is used to:

- Pay off the R1.5 billion debt incurred for the initial construction.

- Maintain the road

- Patrol the road
- Operation of the toll plazas
- Future expansions
- Manage the route with emphasis on increased safety

In 2004 new N4 toll route tariffs, calculated in terms of prevailing South African Consumer Price Index (CPI), increased tolls between 1.64% and 3.33% depending on types of vehicles. In 2006 tolls increased between 20.7% and 23.4 the Mozambique Metical depreciated against the South African Rand and all of the project's debt is financed in Rand. But the concessionaire justified the increase stating that improvements to the road demonstrate that the toll fees are being used for their intended purpose. In 2007 drivers using N4 in South Africa saw a slight increase in tolls (in the line with CPI), however there was no increase for N4 users in Mozambique due to positive changes in the exchange rate over the previous year ("South Africa", 2009).

## APPENDIX D

### North Luzon Expressway (Philippines)

Location of the Project:

The North Luzon Expressway is the main transport corridor from the Manila metropolitan area to central and North Luzon, in the Republic of Philippines. For travelers there is no viable alternative route to North Luzon Expressway ("North Luzon ", 2009).

The expressway begins in Quezon City at a cloverleaf interchange with EDSA: a logical continuation of Andres Bonifacio Avenue. It then passes through Quezon City, Caloocan City, and Valenzuela City in Metro Manila. Meycauayan, Marilao, Bocaue, Balagtas, Guiguinto, Plaridel, and Pulilan in Bulacan. San Simon, San Fernando, Mexico and Angeles City in Pampanga. The expressway currently ends at Mabalacat and merges with the MacArthur Highway, which continues northward into the rest of Central and Northern Luzon. The expressway is 84 km long and connects the county's largest metropolitan area to more rural portions of central and north Luzon.

Duration of the Project:

Contact of The North Luzon Expressway was signed in June 1998. Construction began on the North Luzon Expressway in early 2003 and was completed in February 2005, on time and under budget. Contract was a 30 year B.O.T. contract ("North Luzon ", 2009).

Reasons to Implement the Project:

The North Luzon Expressway was first built between 1975 and 1977 and operated as a toll road. But capacity of the expressway could not meet demand because of the traffic volume growth. With narrow lanes and heavy traffic, congestion became a major problem. Over the years a large number of accidents and deaths happened on the expressway. The government wanted to decrease the congestion on the expressway by widening and repairing the road. So many bridges and interchanges were also in desperate need of renovation ("North Luzon ", 2009).

Another objective was to make the expressway safer for commuters by reduce the number of accidents and fatalities. Numerous accidents and fatalities were caused each year by the sheer number of vehicles on the road which was too narrow to safely accommodate them all. The Philippine government would be able to reduce these numbers by widening the road ("North Luzon ", 2009).

To spur developing north side of metro Manila in the Clark Special Economic Zone was another objective of the PPP. The government wants to develop this zone as a new industrial town and major civil, international aviation complex. As the only

viable road between the special zone and Manila, the expressway needed to be improved so that the connection between the special zone and Manila would support this development goal.

Parties of the Project:

The North Luzon Expressway is operated by a partnership comprised of four partners called Manila North Toll-ways Corporation (MNTC). The public partner is the Philippine National Construction Corporation. The three private companies include one Philippine company which is an infrastructure developer, and two foreign companies. One of them is a French toll road operator and the other one is an Australian construction company.

MNTC and Philippine government signed 30 year B.O.T. contract in June 1998 to rehabilitee, expand, operate and maintain the existing 84 km North Luzon Expressway. The Philippine government retains ownership of the expressway throughout the lifetime of the contract. When the contract expires, operation and maintenance of the North Luzon Expressway will revert back to the Philippine government ("North Luzon ", 2009).

MNTC widened, rehabilitated and repaved 14 interchanges, 24 bridges and 31 overpasses on the expressway. MNTC repaved approximately 295 lane-kilometers and added 138 lane-kilometers. This increased the busiest section of the expressway to eight lanes in each direction. The company also constructed three toll plazas and Operation Management Center as shown in Picture 3.8. MNTC hired about 5.000 local workers to complete the construction.

There was also a multi-sectoral agency called the Toll Regulatory Board (TRB) the members of which come from:

- Department of Transportation and Communication
- Department of Public Works and Highways
- Department of Finance
- National Economic Development Authority
- The Private Sector

The functions of TRB are:

- To identify the toll facilities to privatized and the required level of service
- To screen and select the private sector developer
- To enter into Toll Operating Agreements with qualified entities
- To conduct toll rate hearings following set rules of procedure
- To set toll rates

General Points of the Project:

The Build-Operate-Transfer (B.O.T.) Law of 1993 (as amended in 1994) provided the opportunity to utilize B.O.T. model to the project. The Department of Public

Works and Highways entered into a B.O.T. contract because needed improvements could not be realized by the government's limited fund. A public private partnership (PPP) was granted a 30-year B.O.T. contract with the Philippine government. Key obligations of government and private company according to contract can be seen in Figure7.2.


Figure 7.2 North Luzon Concession Agreement Key Obligations of Government and Private Company (Pascual, 2007)

Tolls are assessed to vehicles on the expressway, so that the PPP can recoup its construction costs ("North Luzon ", 2009). As shown in Figure 7.3, the total cost of the project was 384.000.000 USD. MNTC receives loans from:

| | |
|---|---|
| The Asian Development Bank (ADB) | 45.000.000 USD |
| The International Finance Corporation | 45.400.000 USD |
| The Export Finance and Insurance Corporation | 55.000.000 USD |

The partnership also has 14.900.000 USD sub-debt.

Complementary Financing Scheme loan through ADB for 25.000.000USD

Also

The Multilateral Investment Guarantee Agency (part of World Bank Group) guaranteed 47.500.000 USD in loans

Export Credit France (Coface) guaranteed 34.300.000 USD in loans

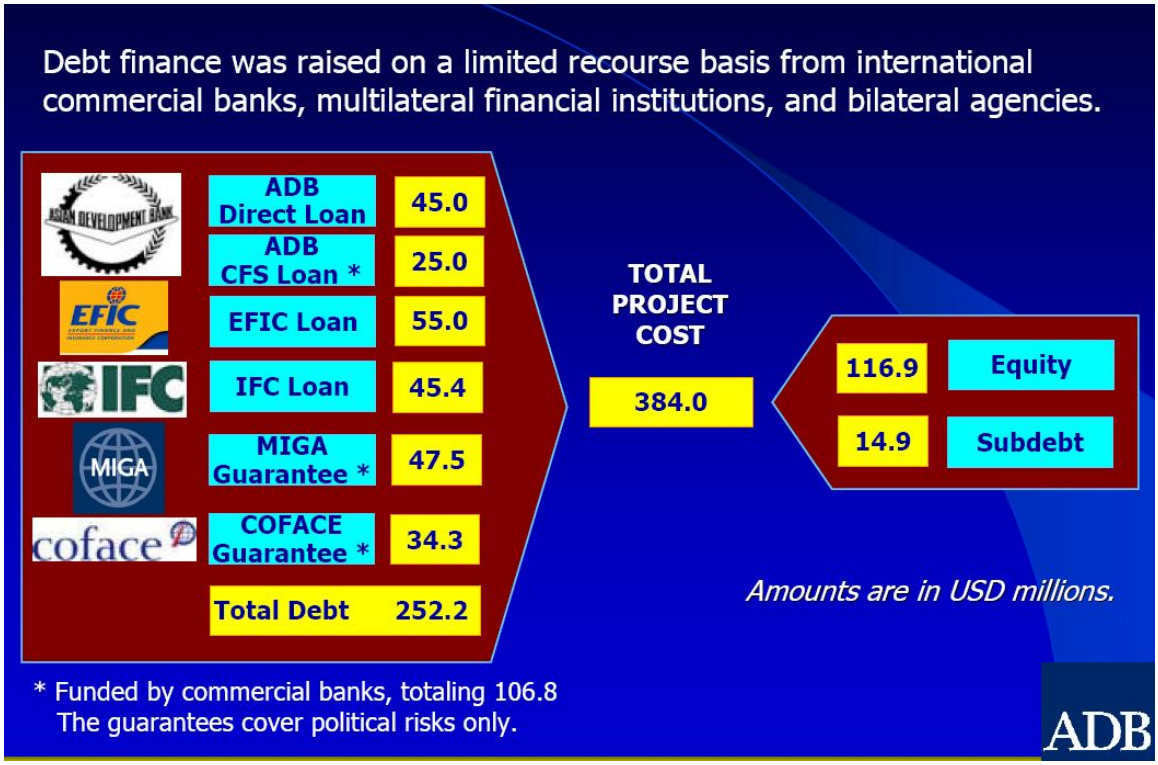



Figure 7.3 Financing of North Luzon Project (Pascual, 2007)

All risks associated with the construction phase of the project was shouldered by MNTC, which was responsible for all construction and maintenance works written in the contract until the end of duration of the contract. ("North Luzon ", 2009) There was no government subsidization for the project. All market risks are born by the private company. In order to recoup its investments, MNTC will set and collect tolls after approval of the Toll Regulatory Board. The Authorized Toll Rate will be adjusted based on an adjustment index, which is determined by:

- the cost of the project still to be recovered
- the rate of inflation in B.O.T. the US and the Philippines
- the peso/dollar exchange rates

## APPENDIX E

### Dulles Greenway (Virginia)

Location of the Project:

The Dulles Greenway is extension of the Dulles Toll Road. (Saunders, 2006) The Dulles Toll (DTR) was built by Virginia Department Of Transportation (VDOT) and opened for traffic in 1984. The DTR was operated by VDOT. The Dulles Greenway was built privately as an extension of the original toll road with private funds and is owned by TRIP II ("Dulles Greenway", 2005).

The Dulles Greenway begins at VA28 by the entrance to Washington Dulles International Airport and ends at the US15 Bypass just south of Leesburg. The Dulles Greenway is an extension of the Dulles Toll Road, which is maintained and operated by the company called VDOT. (Saunders, 2006) It was the first toll road built in Virginia since 1816. Length of the toll road is 22.5 km (14 miles) and connecting Washington D.C. international airport with Leesburg town in North Virginia.

Duration of the Project:

The Dulles Greenway was built as B.O.T. at 29th of September, 1993 in Virginia and opened on October, 1995. The Private consortium financed, built and operated it ("Dulles Greenway", 2005).

Reasons to Implement the Project:

The Dulles Greenway was intended to offer a faster link between Dulles Airport and the points west. Using this road is much quicker than taking other roads to Leesburg. By this toll road travelers could save one hour as compared with previous conditions. Greenway in Northern Virginia was hailed as a trend setter promising financially strapped state and local governments an alternative means of financing badly needed highway infrastructure.

Parties of the Project:

The Dulles Greenway was built by and is owned by a private corporation by the name of Toll Roads Investors Partnership II (TRIP II). ("VA 267", 2009) In 1993, TRIP II was formed to build the Greenway (Saunders, 2006). Greenway's equity partners include the Shenandoah Greenway Corporation, a Virginia family corporation, Autostrada International S.p.a. operator of 2.800 km of toll roads in Italy and Brown& Root, general contractor for Greenway.

TRIP II obtained a 'Certificate of Authority' to toll for 40 years as a part of the original concession agreement with the state before the road was built. Then the State

Corporation Commission extended this to 60 years, accepting the investors' argument that the longer term was needed to fund the capital improvement program.

General Points of the Project:

Project of the Dulles Greenway was prepared as it could be widened in the future. It was built four-lane but it can be widened to 6 lanes. High-tech systems like Automatic Vehicle Identification are planned to use. With this system the travelers would not stop at toll plazas and tolls could be taken automatically while they're passing with 35 mile/hour speed.

In this project the work includes:

- widening the whole length of pike to 2x3 lanes,
- adding two new interchanges, improvements of others,
- construction of a direct connector ramp to Dulles International Airport,
- expansion of the mainline toll plaza from 14 lanes to 18 lanes ("Dulles Greenway", 2005).

The acquisition of land could be taken by the company as:

- 1/3 of the land by contribution
- 1/3 of the land was purchased from local farmers
- 1/3 of the land was hired out from Metropolitan Washington Airport Authority for 42 years. The hired part of the land' annual lending was 100.000 USD.

Total estimated cost of the project was 326.000.000 USD (Hakim, 2009). This project's long term finance was from 13 insurance companies and short term finance was from 5 banks from Virginia, Germany and Sweden. Initially the toll prices were:

- 1.70 USD for each car (later this price has raised to 2.00 USD)
- 4.00 USD for each lorry.

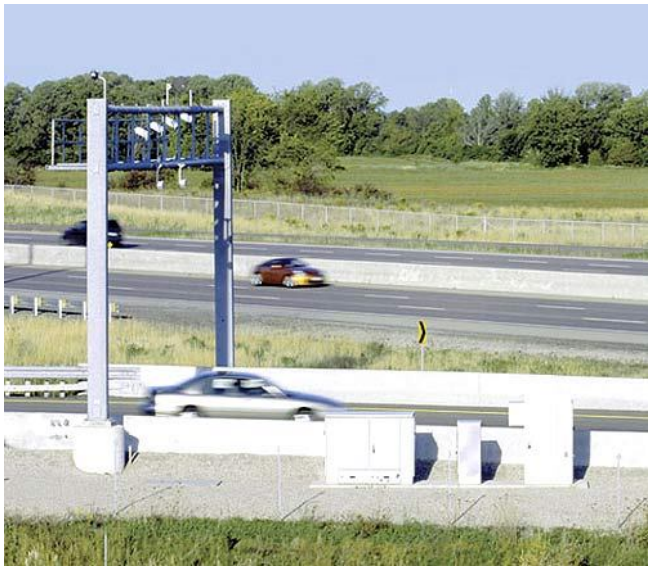
The company has to apply to the State in need of changing the toll prices and after negotiations the prices could be changed if the settlement is arranged. The tolls could not be fall in price but can rise. Anticipated percentage of annual traffic increase was 8%.

**APPENDIX F**

**Toronto Express Toll Road (ETR)-407 (Canada)**

Location of the Project:

The Highway 407 Express Toll Road (ETR) represents Canada's first major public-private financed infrastructure project and the world's first open road with an all-electronic toll collection system **(**Imad, 1998). The highway extends 108km (67miles) from Brock Road in Pickering in the east to the QEW/403 interchange near Hamilton in the west. There are 197 ramps to conveniently enter or exit the highway.



Picture 7.1 Control System at ETR-407 ("407 Express", 2009)

Duration of the Project:

Land adjacent to a hydro corridor was acquired for Highway 407 in the 1960s but it sat vacant for almost 30 years, because the Ontario government opted instead to widen Highway 401 to a 14 lane collector express system. The highway 401's expansion project was considered a success and construction of Highway 407 was shelved until 1987 (Mylvaganam, Borins, 2004).

This project was opened to bid in September 1993 and construction of 407 ETR started in the summer of 1994 and the first 36km were completed in December 1996.the project opened as a toll way in October 1997.ETR 407 was built in record time. By this project 69km toll road was extended to 108km. Total cost of the project was 1.000.000.000 USD and in a final twist 407 ETR was sold in April 1999 by the provincial government to the private sector for 2.100.000.000 USD.

Sections of the highway were constructed with no more than 30 days between design completion and construction start. Completed length of the 407 ETR is 69km which includes:

- 127 bridges
- 29 interchanges
- 15 grade separations
- 13 river/creek crossings
- 8 railway crossings **(**Imad, 1998).

Reasons to Implement the Project:

Highway 407 was the eighth 400-Series Highway planned for Ontario, to serve as a bypass of Highway 401 through Toronto and as a major east-west corridor across the suburbs to the north of the city. The purpose of the Highway 407 Act was to relieve congestion on Highway 401. The 407 Express Toll Road (ETR) is designed as an express bypass to the north of the ever growing Greater Toronto Area providing an alternate route for non-local traffic traveling along Canada's busiest freeway, Highway 401 **(**Imad, 1998).

Parties of the Project:

ETR International Inc. made 99 year concession for management of 69km existing highway and construction of 2 extensions of 39km. Later on the road was sold to a consortium of Canadian- Spanish and Australian interests operating under the name 407 International Inc. (Larsen, B. 2009).

General Points of the Project:

The groundbreaking nature of the 407 ETR has generated a wide international interest since it represents the 'new age approach' in designing, building, operating and financing the construction of new capital highways (Imad, 1998). Because of its wide median, it has the capacity to be extended from 6 to 10 lanes without having the reconstruct existing bridges and interchanges. The 407 ETR also represents the Ministry of Transportation, Ontario (MTO)'s first attempt at a Build Operate Transfer (B.O.T.) project. At bidding process after reviewing the proposals, Ontario government decided to accept two proposals, using one for the highway design and the other for the tolling system (Larsen, B. 2009).

As shown in Figure 7.4 the ETR 407 uses a system of cameras and transponders to toll vehicles automatically. There are no toll booths, hence the name 'Express Toll Route' (ETR). Thus, 407 ETR is the world's first highway to feature this system through. At 407 ETR tolls are collected at regular highway speeds with no slow down in traffic. The toll rates structure that depends on the type of the vehicle and

different charges during the peak, day time off-peak and nighttime periods (Imad, 1998).

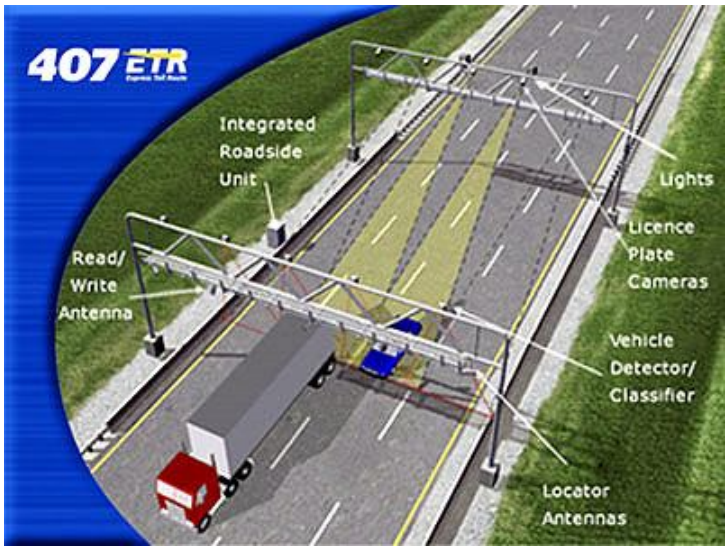



Figure 7.4 Control System of Highway 407 Express Toll Road Project ("407 Express", 2009)

The base toll as of March 2008 for vehicles under 5.000kg weight is:

- 19.00-19.25 cents/km during peak hours
- 18.00 cents/km during the other hours

Upon its opening in 1997, toll rates were:

- 10.00 cents/km during daytime peak hours,
- 8.00 cents/km during daytime off-peak hours and weekends
- 4.00 cents/km during the night

Current toll rates have increased 76%-238% depending on the time of day than rates when the highway opened in 1997. These increases are significantly higher than the rate of inflation which hovers around 2% per year in Canada (Mylvaganam, Borins, 2004).

## APPENDIX G

### Second Stage Toll Road (Thailand)

Location of the Project:

The Second Stage Expressway (SSE) is a 1.100.000.000 USD, 32km inner-city toll road. This 38.4km route is connecting with the First Stage Expressway (FSE) to form an inner ring road around Bangkok.

Duration of the Project:

The Terms Of Reference (TOR) of this project was issued in 1987 by the ETA inviting private sector investors to submit proposals to design, build and finance the construction of the SSE with the right to receive toll revenues from the operation within the certain concession period. With a bidding process, it took only twelve months for the final concession contract to be concluded. The 30-year concession agreement was signed in October 1988. The agreement specified a 3 year construction period for SSE and 27 years for BECL's operation of the facility (Awakul, 2009). At the end of the 30 year concession, SSE would be turned over to the Thai government with no cost. The road was opened to traffic in 1994 ("Privatization of", 2009).

Reasons to Implement the Project:

In 1982, the Second Stage Expressway was planned with the objective to complement the successful First Stage Expressway (FSE) serving as shot cuts between the inner city and the outer areas, hence reducing the heavy traffic in the city center. (Awakul, 2009)

Parties of the Project:

In 1988, the B.O.T. concession for the 38.4km SSE was grant to Bangkok Expressway Consortium, which later became the Bangkok Expressway Company Limited (BECL). BECL was headed by the giant Japanese firm Kumagai Gumi, holding a 65% interest, with the remaining 35% interest in the hands of local Thai partners. The concession contract was between the state agency called Expressway and Rapid Transit Agency of Thailand (ETA). BECL's lenders included 11 Thai banks, 30 foreign banks and the Asian Development Bank ("Privatization of", 2009).

General Points of the Project:

Total cost of the project is 1.100.000USD. Because projected traffic on the SSE would not generate enough revenue to provide for an adequate return, service to debt was not sufficient, BECL presented a proposal for a revenue-sharing scheme

between FSE and SSE over the 27 year operating period of the concession. The ETA agreed, according to decision:

- BECL was going to receive 60% of the combined revenue collected by FSE and SSE during the first 9 year of the operation period.
- The ETA and BECL would then each receive 50% f the combined revenue in the second 9 year period.
- For the third and last 9 year period, ETA would collect 60% of the combined revenue, with BECL collecting the remaining 40% ("Privatization of", 2009).

Picture 7.2 Second Stage Toll Road ("Toll Roads", 2009)

**APPENDIX H**

**Rostock Crossing Toll Road (Germany)**

Location of the Project:

Rostock Crossing Toll Road project is a tunnel beneath the Warnow River between the ferry port and the harbour for Rostock on the east side of the tunnel and the suburb of Lütten Klein.

The project consists of the creation of a new road between the federal motorway A 19 to the east and the federal highway B 103 to the west of Warnow River, including the construction of a tunnel structure crossing the river. Project includes a new toll road and tunnel passing under the Warnow River in the city of Rostock, which is Germany's fourth largest port and is approximately 225 kilometers north of Berlin.


Figure 7.5 Accessing Route of Rostock Crossing Toll Road ("Rostock, Germany", 2008)

Duration of the Project:

The project was planned between 1995 and 2001 and the construction period was between 1999 and 2003. Concession period of the project is 30 years from completion of 4 year construction period ("Tollink Secures", 2001). The contract was signed in September 1996. At the end of 1999 the construction started for the 800m long sub-tunnel in Rostock between the districts of Schmarl and Oldendorf. The Warnow tunnel was opened in Rostock on 12 September 2003. The first toll regulations for this project came into force on 12 June 2003 ("Financial Close On", 2000).

Reasons to Implement the Project:

This project consists of a toll road to be built under the Warnow River to link Rostock Harbour with a large suburb of Rostock. The aim of this project is to allow drivers to avoid congested parts of the city and save journey time. The tunnel extends the A19 from its present terminus at the docks and make a direct connection to suburbs on the western bank of the Warnow River, only used to be accessible by ferry.

Also Warnowquerun GmbH is building Warnow tunnel and access roads to complete the ring road around the city and thus ease traffic density pressure on the local people and environment ("Immersed Tube", 2001).

Parties of the Project:

The French road building giant Bouygues and Infrastructure Trust of Australia (ITA) have teamed (ITA-Bouygues joint venture) up to build operate and transfer Rostock Crossing Toll Road in the Germany ("Financial Close On", 2000).

The Basel, Switzerland based Prognos survey firm undertook numerous surveys to establish reliable traffic accounts and projections based on interviews with road and ferry users. Lead arrangers of the projects are Deutsche Bank, Nord LB and KfW, finance guarantors are European Investment Bank.

General Points of the Project:

The tunnel is a two- lane carriageway standard with toll booths for B.O.T. directions. Total length of Rostock Crossing Toll Road is 4km and total cost of the project is 215.000.000 EURO. The construction phase of this project created 1.300 jobs and created 100 jobs during the operation phase (Eder, 2009).

This project is 4km toll road including 3km tunnel which was expected to have an average weekday volume of 2.000 vehicles. The 4km long tunnel and accessing roads were planned according to expected traffic flows with 80kph maximum speed. Also there is one toll station at the eastern and of the road ("Germany's First", 1998).

The toll is only collected for crossing the tunnel, not for using the access roads and junctions constructed in the framework of the overall project. A full traffic and revenue study was conducted first which include speed measurements and traffic counts during one week to determine real travel times between the most relevant origin and destinations ("Germany's First", 1998).

**APPENDIX I**

**Hills M2 Motorway (Australia)**

General Points of the Project:

As shown in Figure 7.6, Hills M2 is a 21km, four lane motorway that links the lower north shore and the northwest regions of Sydney, Australia (Connects the M7 and Lane Tunnel).

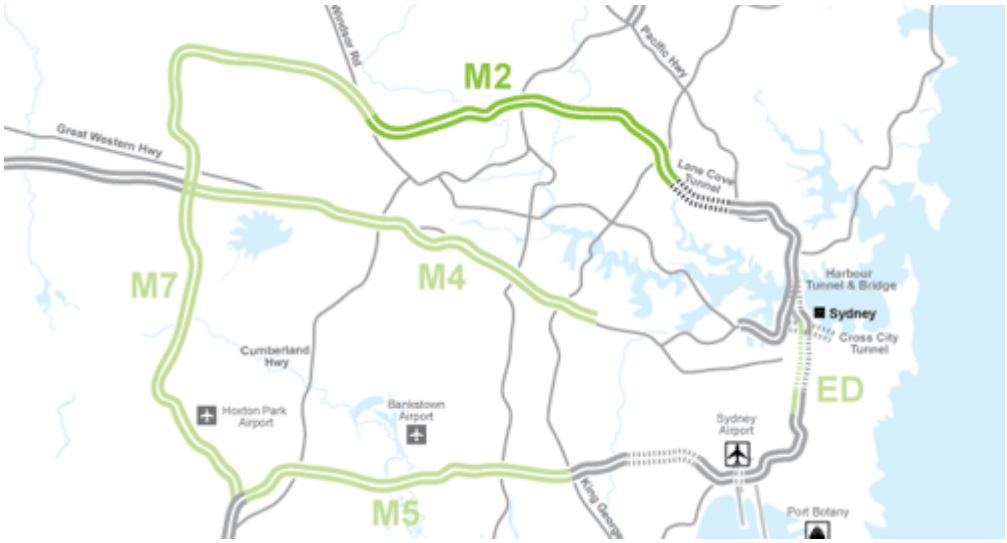



Figure 7.6 Accessing Route of Hills M2 Motorway ("Maps & Tolls", 2009)

Duration of the Project:

The M2 opened to traffic in May 1997 and is now a key part of Sydney's orbital motorway network ("About Hills", 2009). Design and construction period of this project took 3 years. Concession period is 45 years ("About Hills", 2009).

Reasons to Implement the Project:

The car lanes of M2 Motorway will take commuters to the dense North Sydney business are, which is already connected to the main central business district across the Harbor by the famous steel arch Harbor Bridge (8 lanes) and newer Harbor Tunnel (4 lanes) and converging commuter rail lines and buses ("Opening: Sydney's", 1997). Also Hills M2 provides a direct link between the lower north shore and northwest Sydney. This motorway was developed to bypass the busy inner western suburbs.

Parties of the Project:

The New South Wales Government entered into an agreement with Hills Motorway Limited to build, own, operate and ultimately transfer M2 back to the Government at the end of 45 year concession period.

The M2 Motorway was built by an investor franchisee. Hills Motorway Limited. The construction was done under a contract with the Australian Abi Group (also the major shareholder in the franchise) and Obayashi. Hills Motorway Ltd. owns the toll way under a 45 year concession which is operated and maintained by Tollaust. The long term loan was provided by a banking syndicate comprising Westpac Banking Corporation, Long Term Credit Bank of Japan and Credit Lyonnais. The e-toll system of the motorway was supplied by AT/Comm of the Boston area ("Case Study", 2009) (Shirbin, Utz, 1996).

General Points of the Project:

The M2 is a key public transport corridor, also one of the Australian toll roads to include a tunnel when it opened in 1997. This motorway is also fully electronic with no cash boots from December 2007 to assist with free-flowing traffic. When this toll road was opened average traffic volume for weekdays was 68.000 vehicles per day.

The M2 Motorway project includes eight major junctions, a 460m tunnel and dedicated bus lane for bus transport between Old Windsor Road and Beecroft Road which carry more than 45.000 bus passengers on a typical work day. Total cost of this project is 460.000.000.USD ("Case Study", 2009).

## APPENDIX J

**Legal Development of B.O.T. in Turkey** (Tekin, 2007)

- 1910 dated judgment from tempore of Ottoman Empire about implementing some public services in care of private sector is still in force.

- First legal basis of public private partnerships for infrastructure projects was established with 3096 numbered regulation enacted in1984. With this regulation private sector gained the possibility of production, transmission, distribution and trade of electricity which used to be implemented by only Turkish Electricity Administration. Again with 3465 numbered regulation enacted in1988, public sector obtained opportunity of construction and maintaining of motorways which used to be realized by only General Directorate of Highways. By these legal arrangements Turkey is one of the countries that try to establish legal framework about public private partnerships.

- With 3996 numbered regulation enacted in1994 Build Operate Transfer model is described as a special financing model enhanced to be used for realizing projects that require high amount of resource and state of the art technology. (3rd clause) Also with 5539 numbered regulation enacted in1997 to install electricity production plants by B.O.T. model was provided. By this way B.O.T. model was included by public private partnerships applications.

- Constitutional changes at 1999 problems about applying model were dispelled. B.O.T. agreements will be subject to international arbitration and special legal decisions according to these changes. With 5183 numbered regulation enacted in 2004 amendment in State Council Law, Specialization Departments were established about B.O.T. and B.O. to improve judgmental activity.

- With 5302 numbered Special Provincial Administration regulation enacted in 2005, 5355 numbered Local Administration Association regulation and 5393 numbered Municipality regulation local administrations could be able to use B.O.T. and B.O. models for infrastructure projects within their purview.

- Application regulation about Build Hire Transfer model which is another public private partnership model is come into effect in July 2006.

**APPENDIX K**

**Projects Implemented or Projects in Process by B.O.T. Model in Turkey (**Yöndem, 2005)

Examples From Energy and Water Sectors:

Table 7.1 Examples from Energy and Water Sector:

| Name of the Project | Total Investments | Contractor Company | Late Status |
|---|---|---|---|
| Aksu-Çayköy Hydroelectric Power Plant (Isparta) | 6.000.000 USD | Aksu A.Ş. | Commenced operation in November 1989. |
| Hasanlar Hydroelectric Power Plant (Bolu) | 5.939.000 USD | Alarako-Altek A.Ş. | Commenced operation in May 1991. |
| Kısık Hydroelectric Power Plant (Kahramanmaraş) | 4.326.000 USD | Ayen Enerji A.Ş. | Commenced operation in January 1994. |
| İzmit Urban and Industrial Water Supply Project (İzmit) | 890.900.000 USD | İSAŞ A.Ş. | Commenced operation in January 1999. |
| Trakya Natural Gas Combination Plant (Marmara Ereğlisi) | 298.000.000 USD | BBC Mannheim-Enka İnşaat ve Sanayi A.Ş. | Commenced operation in June 1999. |
| Unimar Natural Gas Plant (Marmara Ereğlisi) | 621.000.000 USD | Trakya E.I. Üretim A.Ş. | Commenced operation in June 1999. |
| Dilovası Natural Gas Plant (Gebze) | 235.634.000 USD | Ova Enerji A.Ş. | Commenced operation in January 1997. |
| Esenyurt Natural Gas Plant (İstanbul) | 178.385.000 USD | Doğa Elektrik Üretim A.Ş. | Commenced operation in May 1999. |
| Birecik Dam and Hydroelectric Power Plant (Şanlı Urfa) | 2.660.000.000 Milyon DM | Birecik Barajı A.Ş. | Commenced operation in October 2001. |
| Berdan Hydroelectric Power Plant (İçel) | 9.195.000 USD | Alarako-Altek A.Ş. | Commenced operation in December 1996. |

| Name of the Project | Total Investments | Contractor Company | Late Status |
|---|---|---|---|
| Çal Hydroelectric Power Plant (Denizli) | 3.022.000 USD | Limak Enerji Üetim Dağıtım A.Ş. | Commenced operation in January 2001. |
| Çamlıca Hydroelectric Power Plant (Kayseri) | 164.986.100 USD | Ayen Enerji A.Ş. | Commenced operation in December 1998. |
| Fethiye Hydroelectric Power Plant (Muğla) | 21.159.983 USD | Fetaş A.Ş. | Commenced operation in December 1999. |
| Tohma-Medik Hydroelectric Power Plant (Malatya) | 10.204.376 USD | Alarko-Altek A.Ş. | Commenced operation in December 1998. |
| Girlevik II-Mercan Hydroelectric Power Plant (Erzincan) | 15.796.300 USD | İçtaş Enerji Üretim ve Ticaret A.Ş. | Commenced operation in March 2001. |
| Gaziler Hydroelectric Power Plant (Iğdır) | 10.034.000 USD | Gaziler Enerji A.Ş. | Commenced operation in November 2002. |
| Gönen Hydroelectric Power Plant (Çanakkale) | 11.265.000 USD | Gönen HES A.Ş. | Commenced operation in March 1998. |
| Suçatı Hydroelectric Power Plant (Kaharman Maraş) | 11.556.100 USD | Ere A.Ş. | Commenced operation in January 2000. |
| Dinar II Hydroelectric Power Plant (Afyon) | 4.119.310 USD | Metak Enerji ve Ticaret A.Ş. | Commenced operation in December 2000. |
| Ahiköy II Hydroelectric Power Plant (Sivas) | 3.220.000 USD | Pelka Elektrik A.Ş. | Commenced operation in November 1999. |
| Ahiköy I Hydroelectric Power Plant (Sivas) | 3,216.000 USD | Pelka Elektrik A.Ş. | Commenced operation in September 1999. |
| Sütçüler Hydroelectric Power Plant (Isparta) | 2.007.500 USD | Sütçüler Enerji A.Ş. | Commenced operation in June 1998. |
| Bozcaada Wind Power Plant (BORES) (Bozcaada) | 13.907.878 USD | Demirer Holding A.Ş. | Commenced operation in June 2000. |
| Alaçatı Wind Power Plant (ARES) (Çeşme) | 8.748.255 USD | Güçbirliği Holding A.Ş. | Commenced operation in November 1998. |

| Name of the Project | Total Investments | Contractor Company | Late Status |
|---|---|---|---|
| Yamula Dam and Hydroelectric Power Plant (Kayseri) | 100.822.000 USD | Kayseri Elektrik A.Ş. | Commenced operation in July 2005. |
| Hazar I Hydroelectric Power Plant (Elazığ) | - | Bilgin Elktrik Üretim Dağıtım ve Ticare A.Ş. | Commenced operation in 1996. |
| Hazar II Hydroelectric Power Plant (Elazığ) | - | Bilgin Elktrik Üretim Dağıtım ve Ticare A.Ş. | - |
| Yuvacık Dam | 4.700.000.000 USD | Gama-Güriş, Thames Water and Mitsiu-Sumitomo Consortium | Commenced operation in 1998. |

Examples from Public Works and Transport Sector:

Table 7.2 Examples from Public Works and Transport Sector:

| Name of the Project | Total Investments | Contractor Company | Late Status |
|---|---|---|---|
| **AIRWAY** | | | |
| Atatürk Airport World Trade Center (İstanbul) | 397.000.000 USD | T.A.V. A.Ş. | Commenced operation in January 2000. |
| Milas Airport Terminal Complex (Muğla) | 100.000.000 USD | - | Tender Stage |
| Antalya Airport I.External Line Terminal (Antalya) | 306.000.000 USD | T.A.V. A.Ş. | Commenced operation in April 1998. |
| Antalya Airport II.External Line Terminal (Antalya) | 120.000.000 USD | Çelebi-IC İçtaş | Commenced operation in April 2005. |
| Dalaman Airport External Line Terminal (Antalya) | 72.481.227 USD | ATM Havalimanı Yapım ve İşletme A.Ş. | Commenced operation in July 2006. |
| İzmir Adnan Menderes Airport External Line | 125.000.000 EURO | T.A.V. A.Ş. | Commenced operation in September 2006. |

| Name of the Project | Total Investments | Contractor Company | Late Status |
|---|---|---|---|
| Terminal (İzmir) | | | |
| Ankara Esenboğa Airport Domestic and External Line Terminal (Ankara) | 250.000.000 EURO | T.A.V. A.Ş. | Commenced operation in October 2006. |
| Sabiha Gökçen Airport External Line Terminal (İstanbul) | 3.447.000.000 USD | Limak İnşaat Sanayi ve Ticaret A.Ş.-GMR Infrastructure Limited-Malaysia Aiports Holding Berhad Consortium | Construction Stage |
| **HIGHWAY** | | | |
| Göcek Tünnel | 12.000.000 USD | Göcek Tüneli İnşaat A.Ş. | Commenced operation in September 2006. |
| 3. Bosphorus Bridge and Local Road (İstanbul) | 1.300.000.000 USD | - | Project Stage |
| İstanbul Bosphorus Highway Tube Transition (İstanbul) | - | - | Tender Stage (Approval of Supreme Planning Council Will be Taken for Agreement) |
| İzmit Bay Bridge and Gebze-Orhangazi-Balıkesir Motorway | 5.000.000.000 USD | - | Tender Stage |
| Free Trade Zones (Yumurtalık-Aliağa) | 250.000.000 USD | - | Project Stage |
| G.Antep-Ş.Urfa Motorway | 779 milyon USD | Tubin-Tekfen-Özdemir Consortium | Construction Stage |
| The Dardanelles Bridge Transition (Çanakkale) | 600 000.000 USD | - | Project Stage |

| Name of the Project | Total Investments | Contractor Company | Late Status |
|---|---|---|---|
| **SEAWAY** | | | |
| Çanakkale Kepez Harbour Superstructure Facilities (Çanakkale) | 14.000.000 USD | Kolin İnşaat İmalat ve Ticaret A.Ş., Atlas Yapı Sanayi ve Ticaret A.Ş., Mavi Denizcilik Sanayi ve Ticaret A.Ş. Consortium | Commenced operation in March 2006. |
| Güllük Boat Sidle Quay (İzmir) | 12.000.000 USD | Güllük Liman İşletmeciliği İnşaat, Turizm, Sanayi ve Ticaret A.Ş. | Commenced operation in June 2006. |
| Derince Harbour Container Terminal (İzmit) | 200.000.000 USD | - | Tender Stage |
| Bodrum Passenger Quay (Bodrum) | 19.000.000 USD | Çağdaş İnşaat Turizm Sanayi ve Ticaret Limited Şirketi, ERS İnşaat Sanayi ve Ticaret A.Ş. and SETUR Consortium | Commenced operation in March 2008. |
| **RAILWAY** | | | |
| Antalya-Alanya Railway Project | - | - | Project Stage |
| Ankara-İstanbul High-speed Railway | 3.400.000.000 USD | Alsim ALARKO – O.H.L. – G & O A.Ş. | Commenced operation in October 2006. |
| İstanbul Bosphorus Tube Transition (railway) (İstanbul) | 4.749.000.000 USD | TAISEI- KUMAGAI-GAMA and NUROL Consortium | Construction Stage |

Examples from Tourism Sector:

Table 7.3 Examples from Tourism Sector:

| Name of the Project | Total Investments | Contractor Company | Late Status |
|---|---|---|---|
| Bodrum Turgut Reis Marina (Muğla) | 30.000.000 USD | Doğuş Turgutreis Marina İşletmeciliği Turizm ve Ticaret A.Ş. | Commenced operation in August 2003. |
| Didim Marina (Muğla) | 12.000.000 USD | VOYAGER Mediterranean Tur.End.ve Tic. A.Ş. and DOĞUŞ İnş. ve Tic. A.Ş. Consortium | Construction Stage |
| Çeşme Marina (İzmir) | 7.000.000 USD | IC Yatırım and Camper & Nicholson Consortium | Construction Stage |
| Sığacık Marina (İzmir) | 5.300.000 USD | Global Yatırım Holding-Ege Liman-Global Yapı Holding Consortium | Construction Stage |
| Kaş Marina (Antalya) | 11.607.480 USD | Mak-Yol İnşaat A.Ş. | Construction Stage |
| Alanya Marina (Antalya) | 5.302.474 USD | Alanya Ortak Girişim Grubu A.Ş. | Construction Stage |
| Mersin Marina (Mersin) | 6.137.230 USD | ERS İnşaat Grubu A.Ş. | Construction Stage |
| Dalaman Marina And Seabus Sidle Quay (Muğla) | 12.000.000 USD | VOYAGER Mediterranean Tur.End.ve Tic. A.Ş. and DOĞUŞ İnş. ve Tic. A.Ş. | Construction Stage |
| Datça Marina (Muğla) | 10.500.000 USD | ASKA İnş. A.Ş. | Construction Stage |
| Tekirdağ Marina (Tekirdağ) | 8.000.000 TL | Hakem İnşaat A.Ş. | Commenced operation in April 2006. |
| Yalova Marina (Yalova) | 20.000.000 TL | Setur Servis Turistik A. Ş. | Construction Stage |

Examples About General Administration:

Table 7.4 Examples from General Administration:

| Name of the Project | Total Investments | Contractor Company | Late Status |
|---|---|---|---|
| Edirne İpsala Border Gate (Edirne) | 10.000.000 USD | UMAT Gümrük ve Turizm İşletmeleri A.Ş | Commenced operation in 2004. |
| Iğdır Gürbulak Border Gate (Iğdır) | 7.000.000 USD | UND A.Ş. | Commenced operation in May 2003. |
| Şırnak Habur Border Gate (Şırnak) | 51.000.000 TL | Gümrük Turizm İşletmeleri A.Ş | Commenced operation in March 2007. |
| Edirne Kapıkule Border Gate (Edirne) | 132.000.000 TL | UND A.Ş. | Construction Stage |
| Artvin Sarp Border Gate (Artvin) | 41.000.000 TL | Gümrük Turizm İşletmeleri A.Ş | Construction Stage |
| Hatay Cilvegözü Border Gate (Hatay) | 25.000.000 USD | Gümrük Turizm İşletmeleri A.Ş | Commenced operation in December 2007. |
| Mardin Nusaybin Border Gate (Mardin) | 25.000.000 USD | Gümrük Turizm İşletmeleri A.Ş | Construction Stage |
| Edirne Hamzabeyli Border Gate (Edirne) | 10.740.000 TL | Gümrük Turizm İşletmeleri A.Ş | Construction Stage |
| Edirne Pazarkule Border Gate (Edrine) | - | - | Design Stage |
| Esendere Border Gate | - | - | Project Stage |
| Türkgözü Border Gate | - | - | Project Stage |
| Dilucu Border Gate | - | - | Project Stage |
| Urfa Akçakale Border Gate | 20-25.000.000 USD | Gümrük Turizm İşletmeleri A.Ş | Commenced operation in December 2007. |

| Name of the Project | Total Investments | Contractor Company | Late Status |
|---|---|---|---|
| Kilis Öncüpınar Border Gate | - | Gümrük Turizm İşletmeleri A.Ş | Construction Stage |
| Hatay Yayladağ Border Gate | - | - | Project Stage |
| Hatay Cilvegözü Border Gate | 25.000.000 USD | Gümrük Turizm İşletmeleri A.Ş | Commenced operation in December 2007. |
| Kırklareli Dereköy Border Gate | - | Gümrük Turizm İşletmeleri A.Ş | Project Stage |
| İstanbul Halkalı Border Gate | - | - | Project Stage |
| Şırnak Ali Rıza Efendi Border Gate | - | - | Project Stage |

# BIOGRAPHY

Aymir Gamze Kaya was born in Ankara on the 13th of July, 1983. She completed her primary and high school education in Ankara. Afterwards, she attended Mimar Sinan Fine Arts University (MSGSU) in İstanbul and graduated in 2007.

She started her business carrier in 2004. She got acceptance for Construction Project Management Graduate Programme in Mimar Sinan Fine Arts University in February 2007 after graduation. Between years 2004-2007 she worked for a few architectural design offices. Since 2008 she is working at the construction site to apply what she learned from the master programme.