"MAJOR RISKS IN BOT ROAD PROJECTS IN INDIA"

A PROJECT

Submitted in partial fulfillment of the requirements for the award of the degree of

MASTER OF TECHNOLOGY

IN

CONSTRUCTION MANAGEMENT OF ENGINEERING

Under the supervision of

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CERTIFICATE

This is to certify that the work which is being presented in the project report titled **"MAJOR RISKS IN BOT ROAD PROJECTS IN INDIA"** in partial fulfillment of the requirements for the award of the degree of Master of Technology in Civil Engineering with specialization in CONSTRUCTION MANAGEMENT and submitted to the Department of Civil Engineering, Jaypee University of Information Technology, Waknaghat is an authentic record of work carried out by PRASHANT SITHTA (Enrolment No. 152605) during a period from July 2016 to May 2017 under the supervision of **Assistant Professor Mr. Aakash Gupta,** Department of Civil Engineering, Jaypee University of Information Technology, Waknaghat.

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ABSTRACT

Public Private Partnership is a mutual agreement or collaboration between the public sector, the government and the private sector. PPP is a framework that deals with the transfer of rights of designing and operating a project to a private company but keeps the basic tender rights for itself and when the project has been completed and the private company has operated it for the given concession period which may vary from 20 to 30 years the private company transfers it rights to the concerned authority.

One of the most common operated model of PPP is Build Operate Transfer BOT. BOT deals with the right of the private company to design and build the project and then to operate and maintain it and after that it is transferred to the government. BOT projects have seen increased participations of private sector as they are the main bearers of the profits made and as the government lack funds so they seek it from the private companies. These projects also get investments from the foreign investors also.

With the increased number of PPP projects being undertaken by private sector and increased investments in these projects there have been a rise in the number of problems or risks which have led to the delay in the completion of project period and have caused significant cost and time overruns.

This research deals with the issues and risks that arise with the BOT models during the project life cycle. The risks identified in the project occur in different phases of the project life cycle which are prequalification phase, tendering phase, construction phase and the concession phase. This research identifies the major risks involved and studies their impact using the RII analysis by comparing the responses in the questionnaire. Subsequently this research paper gives some mitigation strategies to handle the risks and gives insight to risk management.

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CHAPTER-1

INTRODUCTION

Infrastructure is an intrinsic module for the overall development and growth of an economy. It furnishes all the primary services that are required by the people in their day to day life which includes the social well being, health and safety of citizens. It also extends essential support to public by satisfying their basic requirements and generates high productivity.

India ranks fourth among the biggest economies in the world, but one important factor that contributes to inhibit its development and advancement is the lack of world class framework of infrastructure. The GDP growth of India is reported to decline by 1-2% every year due to absence of adequate infrastructure. Quick growth of the economy in recent times has placed an increasing stress on existing physical infrastructure such as roads, railroads, ports, airports, electricity, irrigation, water supply and sanitation, all of which now experience the ill effects of a substantial deficit.

To help develop the Indian infrastructure to a world class position and to diminish infrastructure deficiency there are a lot of issues that needs to be addressed in various infrastructural fields. In the initial years of development of infrastructure the government used to take all the measures or if a project was not taken by the government it was completely handled by the private sector. This method of handling the infrastructural sector by only one sectors i.e. either public or private sector was not very efficient and created problems of fund sourcing. The investment requirements are very large and cannot be met by the public sector alone due to fiscal limitations and ascending liabilities of the Government and also because the resources needed are limited and are have much more requirement than what the public sector can provide.

This situation demands the private sectors to participate in collaboration with the public sectors to develop the public infrastructural facilities. To reach this objective the Government of India thought of implementing a whole different model or framewo1rk for the development of infrastructural facilities and called this framework Public Private Partnership (PPP). The major reasons that contributed to the growing involvement of private sector towards development of infrastructure included efficient project delivery and operations, matching the increasing needs of investment through additional resources and having rapid access to advanced technology.

The following table defines the difference of working of the public sector, private sector and the combined working of public and private sector i.e. PPP framework. The inferences that can be made from the following table is that there has been seen progress in the development of the infrastructure sector because of the increases use of PPP. PPP led to sharing of risk between the public and the private sector which did not put all the burden at one party and it also increased the investments s both parties contributed to the project.

Table: 1.1 Comparisons between Private Sector, Public Sector and PPP

Attribute	Private Sector	Public Sector	PPP Project Delivery Method
Responsibility	Entrepreneur	Government	Government
Ownership	Private Firms	Public department/ government	Government
Services	Managed by private operator	Government	Mutual agreement
Risk undertaking and reward share	Private Firms	Government/Public	Both public sector and private sector share the risk and rewards

The development of a nation is laid down by the growth it makes in sectors like health, education, economics etc. and for each sector to progress physical infrastructure is mandatory and indispensable. Physical foundation has a direct impact on the development and general enhancement and expansion of an economy. The objectives of comprehensive development and 9 percent development in GDP can be accomplished just if India's base shortage is succeeding. Foundation improvement will likewise make a superior speculation atmosphere in India. To create framework in the nation, the Government is relied upon to audit issues of distribution of budgets, levy arrangement, financial investors and motivators, investments from the private sector, and open private organizations (PPPs).

1.1 OBJECTIVE OF THE THESIS

The objectives of the thesis are:

1. To identify the risks in BOT models for Infrastructure Sector especially in the Road Sector.
2. To study the reasons for failure of projects under Build Operate and Transfer model in India.
3. To identify the critical factors responsible for delay in construction.
4. To analyze the responses using RII analysis method and suggest probable solutions.

1.2 SCOPE OF STUDY

The study conducted has been done in order to identify and assess the impact of risks on the BOT projects being undertaken in India. The scope of the study is limited to discover the various risks and causes of failure of BOT project and to identify the problems that the project faces during its entire life cycle because of the application of PPP projects. The study also signifies the impact of risks involved in the BOT model on the public sector as well as the private sector. The study revolves around the measure of impact of various types of risks that incur as the project advances and then planning the project in such a way that the risks have minimum effect on the project.

1.3 NEED OF STUDY

To increase the economic growth of India and to increase the pace at which the infrastructure sector is flourishing the Indian Government is stressing on the use of PPP in projects. This is so because the PPP projects give a solution to the problem of lack of availability of fund or investments for the projects as the private firms and also the foreign investors can invest in these projects. In India the most used sub type of PPP project delivery method is the BOT- Build Operate and Transfer model.

It has been found that a country can only develop efficiently and compete in the race of becoming a superior market only if the infrastructure especially the road network is strong and the all the areas in the country are interrelated and interconnected with the huge network of roads. The welfare of the society includes development in health sector and education. These sectors can flourish if there is good infrastructure and also when the health and educational institutional are connected with the places around it with good network of roads. Only then it is possible for the general public to take advantage of such facilities provided by the government. Also this attracts the foreign entrepreneurs which in turn increases the GDP of the country and brings about new technology and innovation.

With the increased use and demand of BOT models in the road network development it has been seen that there is also an increase in the problems and risks that occur in the project. It has now become important to analyze those risks and identify the risks at the correct stage of the project life. This will help to reduce the risk undertaken by both the public and private sectors and also will result in the timely delivery of the project to the public. A deep study on this topic will result in easy management of the operation and maintenance phase and also help to avoid the delays that occur in the construction phase.

1.4 RESEARCH METHODOLOGY

The research includes study of quantitative, qualitative and detailed analysis of the literature review and an extensive study of the research work by many researchers. The research involves literature study, examining the journals, conducting questionnaire surveys and studying the impact of the risks on the public as well as private sector.

It includes the study and identification of risks that occur in BOT projects in India and using the knowledge gained to find solutions to the problems and to improve the decision making process. The questionnaire has targeted contractors and people who have done work in PPP project. The collected data has been analyzed using Relative Importance Index (RII) analysis tool and the results have compared in order to rank the risks according to their impact on the different phases of the project life cycle.

1.5 RESEARCH LIMITATIONS

The study may have some limitations which are given below:
1. The quantity of questionnaires could have been increased. This was not possible because many from the targeted audience were unwilling to send feedback and fill the questionnaire
2. Primary data may have not been very realistic as it can suffer from biasness.
3. Respondents may have avoided giving extreme responses in the Likert scale or may have favored their organization.
4. Reluctance of government employees to participate in the study and give unbiased answers.

1.6 ROAD INFRASTRUCTURE

India has a road network measuring to 4.87 million km and stands second in terms of the ranking of largest road networks in the world. . About 60% of all goods and 85% of population of India travels through this road network. With the passage of time there is an immense improvement in connectivity between cities, towns and villages all over the nation. Government of India has set aside 20% of the investment of US$ 1 Trillion for infrastructure during the 12th Five Year Plan to develop the country's roads network of the need to lessen the burden on existing roads and increase the quality of basic facilities.

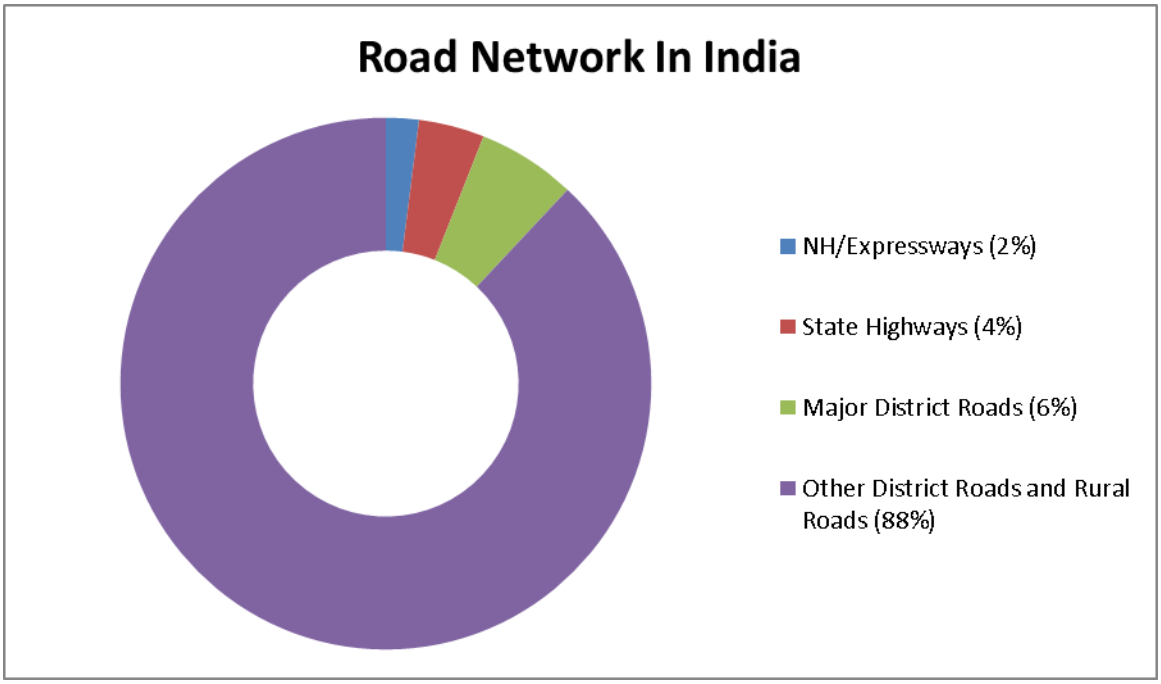

Figure: 1.1 Road Network in India

The roads in India carry almost 90% of the passenger traffic of the country which also explains the reason of growth of sale of automobiles in India.

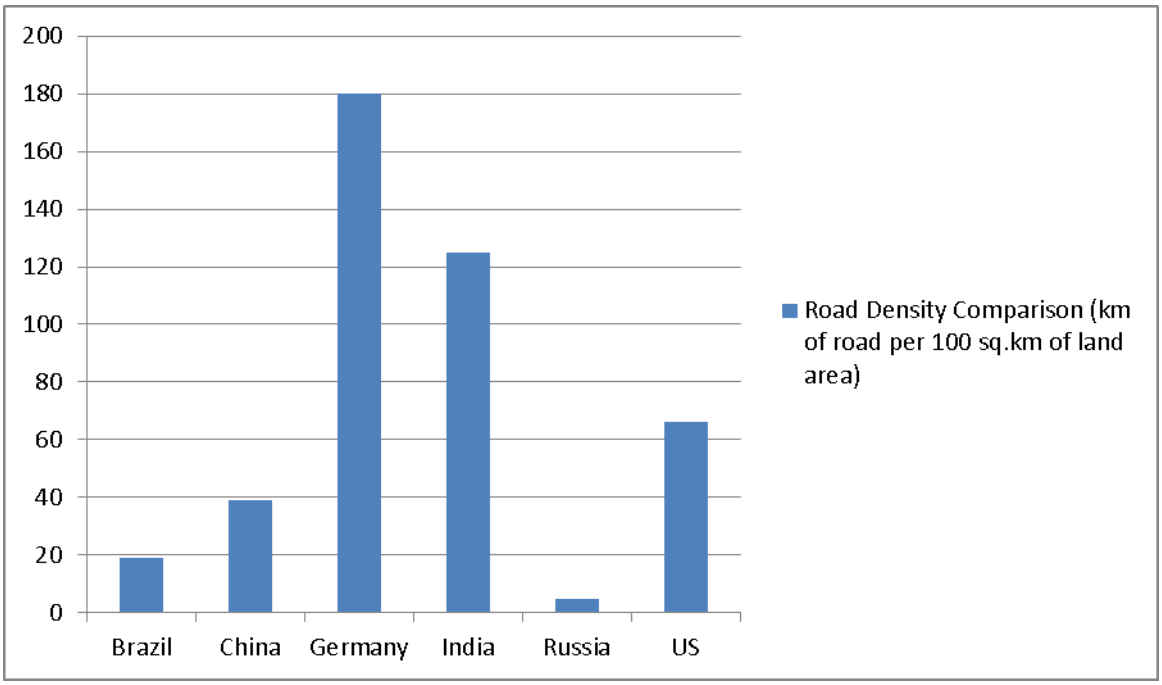

Figure: 1.2 Road Density Comparison

Also it is estimated that the length of the national highways in India is expected to grow from 92,850 kms what was observed in 2013-14 to 100,000 kms by the end of 2017. Many new projects have been launched to develop the road infrastructural sector, one of the main being the Pradhan Mantri Gram Sadak Yojna (PMGSY) has its primary objective to connect all the unconnected villages which have population of more than 500 persons(250 persons in the hilly areas and desert areas) by all weathered and good quality roads.

1.7 PRESENT STATUS OF NATIONAL HIGHWAY DEVELOPMENT PROGRAM (NHDP)

NHDP has completed some major projects like the Golden Quadrilateral that links four metro cities and also has brought forward projects like North-South-East-West (NSEW) Corridor. But during the past years, NHDP has witnessed delay in the progress of road projects due to restructuring of the projects, low financing, litigations and liquidity problems. Thus if 60 projects were ready for bidding only ten have been awarded till date. Around 44% of the total length under NHDP still remains exempted from being bid.

1.7.1 Key Trends in the Development of National Highways

1. The level of participation of the private firms has increased but investment still suffers because of high document cost and slow access to finance.
2. It has been seen that the foreign participation has increased as NHDP phases saw participation from other Asian developers.
3. The government has taken many new initiatives to increase the private investment and also has come up with new tolling policy.
4. State highways have seen increase in the quality as well as the density of roads. Many states of India have seen the development in road sector. Karnataka- up gradation of road length of 1055 kms, Andhra Pradesh- long term maintenance contract for 6523 kms, Gujarat- maintenance of 1000 kms of state highway annually, Madhya Pradesh- private investments of Rs 3000 crores in 23 projects under BOT scheme, Rajasthan- five state highways covering 1053 kms under BOT basis with investment of Rs 1500 crores.

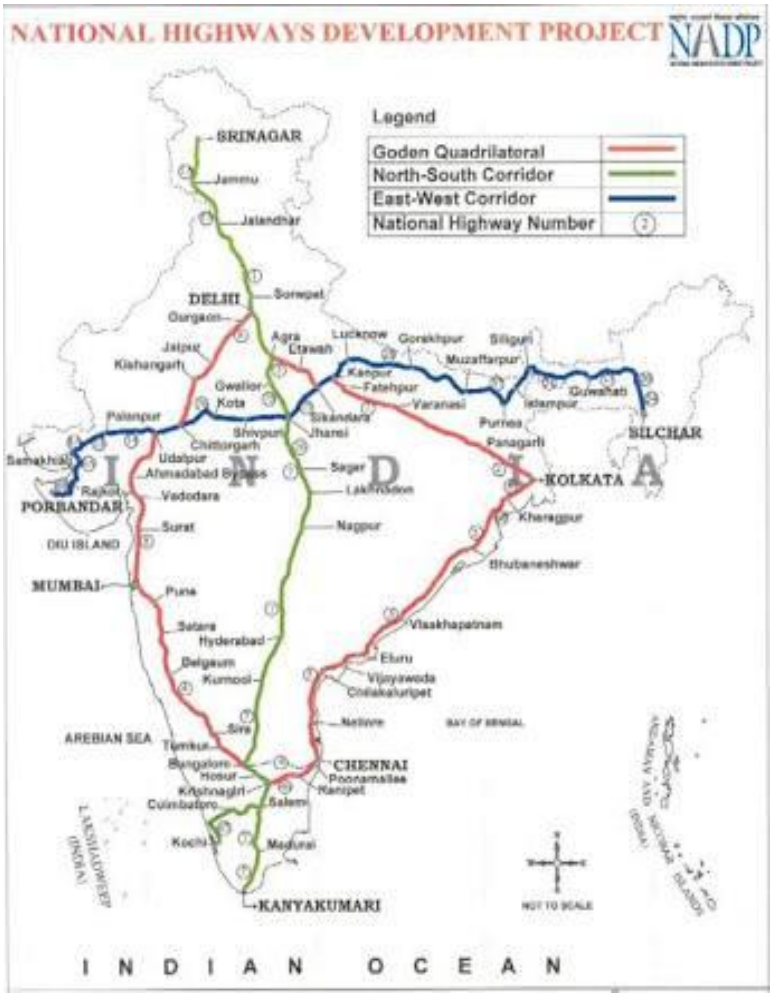

Figure 1.3: National Highway Development Plan

1.8 TWELFTH FIVE YEAR PLAN

In the Eleventh Plan inadequate infrastructure has been recognized as a major limitation for rapid growth. The need for this gigantic investment in infrastructure based projects on a combination working of public and private sectors, the latter usage of various forms of PPPs was therefore more focused on. The total investment in infrastructure included roads, railways, ports, telecommunication and power generation, oil and gas pipelines, and irrigation, is estimated to have increased from 5.7 percent of GDP in the initial year of the Eleventh Plan to around 8 percent in the last year of the Plan.

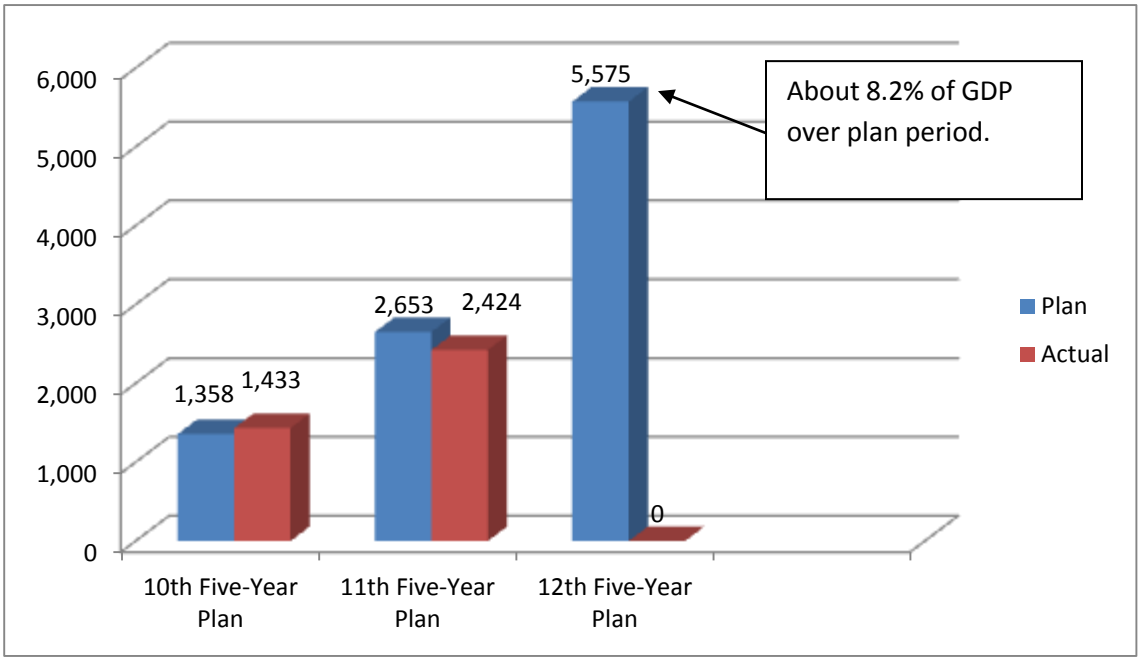

Figure 1.4: Comparison Of Five Year Plans In Investments In Infrastructure.

The investment in some sectors have shown to be a great success such as telecommunication and oil and gas pipelines whereas in sectors like electricity, railways, roads, and ports targets are not being achieved. Success has been achieved in attracting private investment in infrastructure through PPP route, not only at the level of the Central government, but also at the level of individual states.

The Planning Commission in its Twelfth Five Year Plan Document (2012-17) expects investments in infrastructure projects to be worth US$1 trillion. Total investment is expected to be in the range of 7-9 per cent as a percentage of GDP.

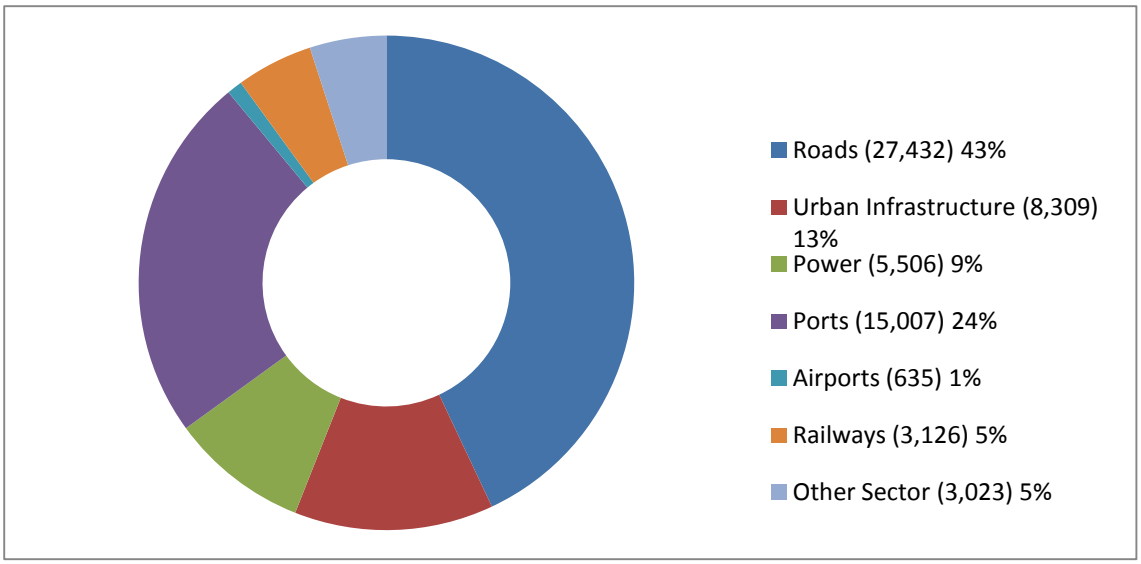

Figure 1.5: Capital Deployed in Different Sub Sectors of Infrastructure Sector

The main factor that has hindered the growth of Indian economy was considered to be financing issues but with the time India has seen a growth in the number of infrastructural projects being assigned to the private sector. The factors responsible for impeding private investments will be examined and necessary steps will need to be taken to rectify them. PPPs, with suitable regulation and concern for equity, need to be encouraged in social sectors such as health and education. However, public investment is still largely expected to finance infrastructure needs in backward and remote areas for improving connectivity and expanding much-needed public services. Since resource constraints will continue to limit public investment in infrastructure in other areas, PPP-based development needs to be encouraged wherever feasible.

Table 1.2: Targets for the 12th Five Year Plan

	STATE HIGHWAYS		MAJOR DISTRICT ROADS	
	Kilometers	% of Total Lengths	Kilometers	% of Total Lengths
2-Lane	30000	30	20000	8.5
4-Lane	5000	8	1000	4
Strengthening	41500	25	66500	25
IRQP	50000	30	80000	30

In the past few years the Indian Power Sectors have attracted much private investments. India's total generating capacity is around 173,626.4 megawatts (MW), of which the private sector accounts for the lowest (21.2 percent). For rural electrification, rapid urbanization and industries across the country India is expected to make significant investments in the power sector. Under this Twelfth Plan, the private sector is probably going to account for a major share of the

additional capacity (55.6 per cent). PPP is expected to be the most preferred route for such undertakings.

1.9 NATIONAL HIGHWAYS AUTHORITY OF INDIA (NHAI) AND INVESTMENTS IN PPP PROJECTS

The National Highways Authority of India (NHAI) was set up under the National Highways Authority Act 1988 for improvement, support and maintenance of National Highways. The National Highways Development Project (NHDP) that costs around USD 60 billion is managed solely by NHAI. NHAI has the right to collect tolls on its own and it is also concerned with the safety on roads and for environmental sustainability and the maintenance and operations of national highways.

The NHDP is implemented under these following phases:

Phase I: Involves widening of the national highways especially linking the 4 metropolitan cities i.e. the Golden Quadrilateral.

Phase II: Improvement of the North-South and East-West passage covering 6,647km.

Phase III: 4-laning of high thickness national highways comprising 12,109km through BOT model. It aims at providing connectivity to increase tourism.

Stage IV: Up degree of single-path streets of about 20,000km to 2-lane.

Stage V: 6-laning of 6,500km four-lane roadways.

Stage VI: Construction of 1,000 km of expressways.

Stage VII: Construction of ring streets, by-passes, underpasses, flyovers, and so on.

1.10 TARGETS SET AND ACHIEVEMENTS

PPP project delivery method has been widely used in NHDP. Three main types of PPP models have been used: Build Operate and Transfer (Toll) Model; Build Operate and Transfer (Annuity) Model and Special Purpose Vehicle (SPV). More than 60% of the investments in the NHDP projects are from private sector.

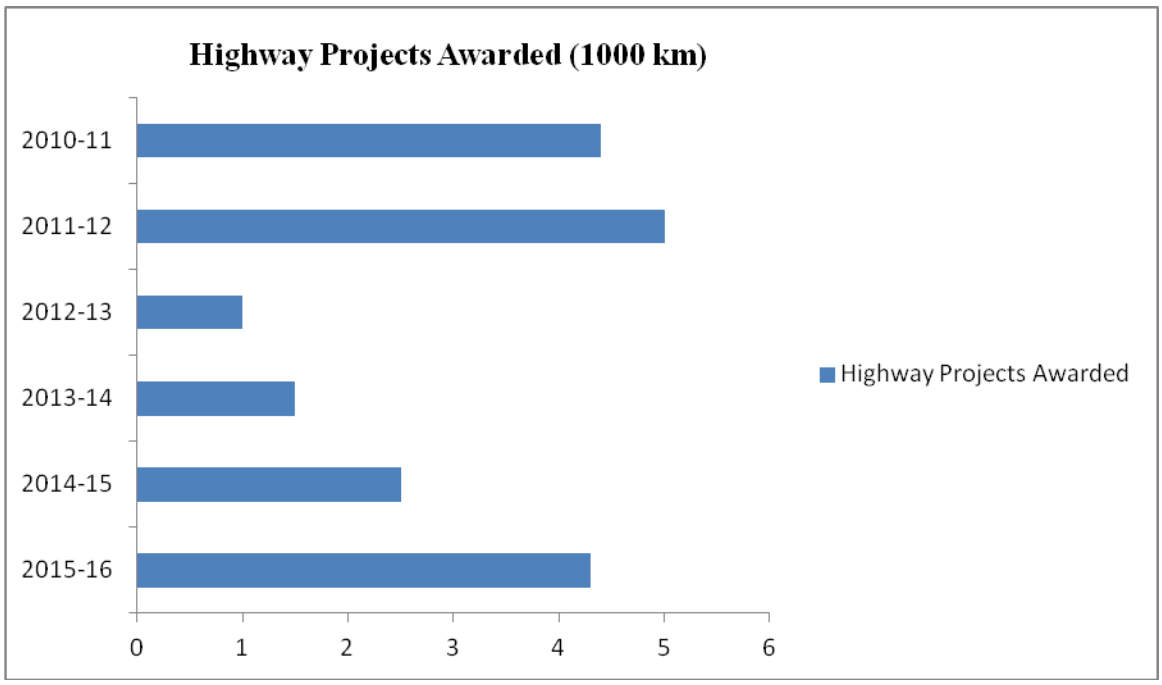

Figure 1.6: Highway Project Awarded (1000 km)

The above bar chart sees an increase in the projects awarded to the private sector by the Indian government in the past three years despite of the decline in the initial period.

CHAPTER-2

LITERATURE REVIEW

2.1 INTRODUCTION

Public Private Partnership (PPP) is a contract or an arrangement based on mutual understanding of one or more public and private parties for a longer span of time to build infrastructural projects to attain the future needs. The government face problem of financing the projects which is solved by the private party which funds the project and also performs functions of designing and implementing the project. The public party monitors the project and also plays a small part of funding the project. Depending on the control each party access the risks are distributed.

PPP also play a major role in improving the social infrastructure that is health and education. Improvement in these fields is not possible unless there is good infrastructure provided. Infrastructure is needed for:

1. Economic growth of the nation and increase the human capital.
2. Access to the market nationwide and also globally.
3. To prevent reputational loss of a country.
4. Provide urban development.

PPP uses a project delivery method known as BOT- Build Operate Transfer which increases the capability of the working of the private firms thus increases the investments. Here the government acts as a consumer and regulator. This sort of delivery method has gained a lot of importance in the current period. This leads to more and more participation by the private firm which decreases the pressure on the government for the infrastructure future needs.

This chapter mainly takes into consideration:
1. The study done by the researcher in area of construction projects.
2. Factors regarding failure of PPP projects.

The chapter consists of literature reviews of various research papers in areas of construction projects highlighting the road sector.

2.2 BACKGROUND

PPP has often been misused as a synonym for privatization but there is a lot of difference between PPP and privatization. The main differences are:

1. Institutional arrangement- Privatization is more of a formal agreement based on certain principals but PPP works on mutual trust and cooperation.

2. Goal- Privatization focuses on increasing the efficiency of the job while PPP involves synergy and quality.

3. Management- The type of management involves in privatization is solely derived by project specification while the driving force behind the PPP projects is enhancement and steps to acquire future innovations.

In India there are over 8000 PPP projects out of which 529 are government infrastructure BOT road sector projects. The total cost incurred in these road sector projects is 311,186.17 crores. Out of these only 18 projects have been completed so far which includes 13 projects being completed in Rajasthan.

2.3 LITERATURE STUDY

Infrastructure development is the most essential factor for the economic growth of a developing country like India. It is not only needed to push the economic growth but also to achieve the concept of globalization and enhancing all the sectors of the economy that is brought about by the improvement of roads, railways, ports, buildings etc. However India has faced many challenges regarding infrastructure development, the main causes being huge capital investments and lack of an organised framework. To overcome these problems the need to setup Public Private Partnership (PPP) model was felt which has a lot of potential to provide better infrastructure projects.

2.3.1 "PUBLIC PRIVATE PARTNERSHIP IN NATIONAL HIGHWAYS: INDIAN PERSPECTIVE PUBLIC PRIVATE PARTNERSHIPS FOR FUNDING TRANSPORT INFRASTRUCTURE" by Gajendra Haldea.

India's road network is the second largest road network in the world consisting of national highways, connecting routes from villages to main cities, expressways, flyovers and many other roads. These roads are not only fully occupies during the daytime but also in the night carrying passenger traffic and also freight. The investments in the roads sector has significantly increased in the Eleventh Five Year Plan from the previous one by approximately 2,00,000 cores.

To manage the governance and maintain the smooth operation of this huge network of roads National Highways Authority of India (NHAI) was established under the National Highways Authority Act 1988.

Gajendra Haldea explained in his studies the importance of Public Private Partnership in India and that PPP is the way forward for the making and building of world class highways. He studied about the existing road networks in India and the contribution of government and NHAI for expanding the road network. Haldea mentioned the importance of a framework for attracting private investment and also deduced that viability gap funding and model documents are the

supporting pillars of the PPP framework. He made the following inferences from the research conducted which include the emerging popularity and usage of PPP projects and also discussed the issues that arise from the financing of highway projects.

National Highways in India are developed under two models of PPP which are BOT (Toll) and BOT (Annuity).

Table 2.1: Difference between BOT (Toll) and BOT (Annuity)

BOT (Toll) Model	BOT (Annuity) Model
In this type of model the amount invested by the concessionaire is recovered by charging toll from the users of the road facility. This is used for most of the projects and the risk involved in this project such as the traffic risk is handles by the private party.	Here the concessionaire gets a minimum amount of return on his investment that is assured in the form of annuity payments. The risk is bear by the government.

Haldea suggested that a comprehensive framework is a pre-requisite for Public Private Partnership. A standardised framework gives a clear transparent view of the risks being faced or to be faced in the near future and also clears the objectives and goals leading to minimum disputes. The use of documents such as the Model Concession Agreement (MCA) which consists of a precise policy and manual for specifications and standards has eased the process of decision making. Viability gap funding was another major concept that was looked upon. The government is implementing a scheme called the 'Scheme for Financial Support to Public Private Partnership in Infrastructure' so as to bridge the gap of the projects being operated under PPP. This scheme only plays a role when the project involves the agreement with a private company which is selected by a process of open bidding.

Haldea mentioned some of the major risks that are involve with the use of BOT project, the main being traffic volumes, user fee and capital costs.

1. User fee- for the entire concession period a balanced mechanism for devising the user fee should be followed. If the indexation is very high the users have to pay more for the service when they were ought to pay less. This adds uncertainties in the financial aspect of the project being undertaken.

2. Local traffic- due to the absence of an alternative road the highways incur a lot of traffic during its building process and after that on the toll taxes. This can be avoided by ensuring free toll services to the locals until new lanes have been built.

3. Operation and Maintenance- maintain a highway and ensuring its correct operation for a longer period of time is the main test of service delivery. Safety requirements need to taken into consideration. MCA provides a dynamic mechanism for the same.

2.3.2 "NEW MODEL OF INDIAN ROAD PPP PROJECTS, ASIA PACIFIC FORUM ON PUBLIC-PRIVATE PARTNERSHIPS FOR TRANSPORT INFRASTRUCTURE DEVELOPMENT", by Abhaya Krishna Agarwal and Ernst & Young LLP.

Abhaya Krishna Agarwal and Ernst & Young LLP, India studied the enormous road network in India and the evolution and extent of use of PPP projects in India in road/highway sector and looked over the emerging trends in PPP models and also at the need for new PPP projects. It was found that India has a high density of roads as compared to the other countries and the key stakeholders of the road sector are the Centre Government, the State Government, the public and private banks and also authorities responsible for road development in India like NHAI etc.
They concluded that BOT projects have the maximum usage and provide features like road alignment, good design and huge investments but are facing a lot of challenges in the contracting process. They gave symptoms of the problems and also an appropriate measure to lessen the impact of these problems on the project cost and duration.

Table 2.2: Causes and Effect of Factors

CAUSE	EFFECT
Lack of interest of private sector for participation in PPP-BOT projects	This leads to minimum choice between different contractors and less of expert groups
Lack of investments and rigid financial policies	This leads to the delay in the operational and completion period of the project and also many conditions are not fulfilled
Untimely clearance from defence or environmental bodies	This results in delay in the construction phase and delayed delivery of the end product
Change of government	This results in change of the scope and goals and also intermediate addition of new objectives.
Demographic variations	Poor traffic estimates and mismanagement of project
Inefficient risk assessment	No transfer of risk and no distribution of risk between the parties involved thus one faces all the challenges

This meant that there was a need to consider the other PPP models and work immediately and take actions to reduce the risks and have proper management of the projects under PPP models

2.3.3 FAILURE OF PUBLIC-PRIVATE-PARTNERSHIP IN INDIA by Shubh Soni

Shubh Soni mainly focused on the reasons because of which most the PPP projects in India were still under the status of incomplete or stalled despite of their widely accepted use and of the concept gaining so much popularity. Soni considered the experimentation in the PPP model projects in the past decade a failure. This inference by her was made by analysing the data of the Economic Survey of India 2014-15, which reflected that the pile of stalled projects has risen at an alarming rate. The estimates even suggested that for every 100 rupees of projects which are under implementation, projects worth Rs. 10.3 were stalled. In infrastructure i.e. in roads and highways, the Union Minister for Surface Transport & Shipping stated in 2014 that "as many as 189 projects with a cost of Rs. 1, 80,000 crores are stuck" and that "PPP mode is not possible now".

This is the main reason that India today faces "The Balance Sheet Syndrome", in which the organizational balance sheets continue to be over-extended and also the debt to equity ratio has been rising rapidly. This has increased because the public sector has been exposed to risk form corporate sector in the form of public private partnerships. As the corporate is under more and more debt it is getting difficult for the banks to sanction new loan which hinders the development process. Thus one can infer that the crisis in the banking sector has become both a driver and a consequence for the failure of PPP models in India regarding infrastructure especially in roads and highways.

Soni mentioned that infrastructure sector in India faces two big transaction costs that are dispute resolution and land acquisition where the first one often arises as the result of second.
During the construction of roads disputes can arise with either the local bodies or the forest department. These disputes go on sometimes around 10 years even. This slows down the process of construction and the time and money involves in solving the disputes can cause unexpected delays. As per the data of NITI AAYOG, 2015, over Rs.21, 000 crores worth disputes involving 870 cases are still in queue for resolution in the Road sector alone, which are mostly the PPP projects and some being public funded projects. The disputes in the PPP projects have significantly increased from 56 cases (Rs.803 crores) in 2013 to 116 cases (Rs.11, 580 crores) in 2015. This is the result of absence of a clear and fast dispute resolution mechanism which in turn is increasing the costs of projects and also giving a bad reputation about the PPP projects to the other investors that is hindering the investment in these projects. Also in many situations the project authorities do not discharge their obligations timely which in turn impose additional and unwanted costs on the private sector.

Another major problem arises due to land acquisition, which has made development process in any aspect of the sector an enormous challenge. The loopholes in the law regarding the land acquisition have created major challenges for the private sector participants. Nor the farmer nor

the industry is benefitted from the act. Also the laws that have been created to protect the interest of farmers and private sector have not been implemented properly. For example, the projects are assigned are prior to the clearances and requisite of land. This delays the project completion period and also the cash flows involved in the project.
Also the risk assessment and allocation hinders the growth of the project as the clear responsibility to be taken for the risk is vague and not distributed equally between the public and private partners.

2.3.4 ISSUES AND PROSPECTS OF PUBLIC PRIVATE PARTNERSHIP IN INDIA by Karunendra Pratap Singh

In this research paper Karunendra Pratap Singh wrote the observations regarding the difficulty for the private sector to cope up with the increasing financial requirements involved in the infrastructural development and at also handling the risks that occur with the advancement of project. Therefore it is important for the government to work together with the private firms so as to decrease the burden of huge funds needed and there is a need of mutual agreement between the two so that there are friendly policies and both the parties are equally benefited and also the public does not suffer because of the risks that may occur in the project delivery.

The paper discusses various advantages and disadvantages of PPP in India and investigates the various problems. Many risks involved in the project were discussed briefly and the reasons for their occurrence were also given. The following explanation includes the cause of the risks that were majorly identified by the study conducted.

Implementation risk arises due to non availability of good contactors and as a result of the damage caused to the environment.

Market risks are a result of the unequal level of the demand and the output.

Finance risks occur because of inflation and increase in the taxations and interest rates of the banks. Also the foreign policies have an effect on the project.

Maintenance risks arise because of the turnover or absenteeism of labour and employees and because of the technological risks that may occur.
The road sector is at boom but the risk factors have hindered the growth. It is important for the private sector to understand the social needs and also it is the responsibility of the public sector to provide space to the private developers for innovation and new models and opportunities.

2.3.5. RISK VARIATION ASSESSMENT OF INDIAN ROADS PPP PROJECTS by Anil Kumar Gupta, Dr. M.K. Trivedi and Dr. R. Kansal

Infrastructural development is the main issue which handled with clarity and attention can lead to economic growth of India. The participation of the private sector and their investment in the

infrastructural projects leads to the growth of economy. M.K. Trivedi analysed that the success of the Twelfth Five year plan mainly depends on the increased participation of private firms in public sector projects and to the success of Public Private Partnerships. They analysed the major risk factors of ongoing PPP highway projects and also identified the impact of these risks factors over the different phases of the BOT project life.

The main reason identified for poor economic growth of India has been due to poor physical infrastructure. Good roads are not only needed to carry freight but also to provide basic facilities such as health and to increase the area of communication. The economic advancement of a nation is based on the development in its road network that provides ease of travelling and also avails new job opportunities and increased entrepreneurship and innovation.

Financing the infrastructural projects is not an easy process. It needs huge amounts of investment that cannot be brought about by the single participation of the public sector. Public sector coupled with the private sector increases the amount of finance needed. The share of investment of the private and PPP should be around 50 percent in this plan. As the resources are limited in nature it is important to have a mutual collaboration to achieve a specified target. For this reason the government authorities are calling for bids to cover the targets of building huge network of roads but the private sector are bidding at a low price and the overall risk is not being looked into.

Projects are prematurely withdrawn because of the problems caused by land acquisition and environmental clearance issues and also the disputes that occur with the locals. Due to this the general public is suffering because of the poor performance and non completion of the PPP projects.

The life cycle of the BOT project is long so many risks occur during the operation of the life cycle of the project, main problems arising because of the poor estimation of the risks. Many of the risks arise in the first phase of the project because of the complex documentation process and financing problems. The sub agreements involved lead to a tedious process and also poor estimation of the market condition can create additional problems.

They categorised some of the major risks involves in the PPP projects. They are listed below:

Regulatory Risk arises due to poor regulatory framework which is unable to handle disputes and lack of independent working of the framework.

Legal Risk arises because of poor management and detailing of the contact conditions.

Political Risks are increasing more and more. Change of government and unwanted interference of the government can delay the project. Change of government leads to change in policies or addition of new policies that can have adverse affects on the project and the project may need new permissions.

Land Acquisition is the biggest reason for the failure of BOT projects. To minimize the effect of this problem one should start the commencement of project only after the land required has been handed over by the government to the private sector.

Funding Risks and Interest Risks arise due to lack of participation of the private firms and continuous change of the policies.

Termination Risk is the risk that it can be a case that the project may be terminated earlier either due to lack of funds or due to some technical failure.
The study suggests that one of the main reasons of such a high risk in BOT projects is long project duration and the risks eventually increases as the project life cycle progresses and the risks becomes maximum during the construction phase.

2.3.6. A STUDY ON PUBLIC-PRIVATE PARTNERSHIPS WITH REFERENCE TO INDIAN INFRASTRUCTURAL PROJECTS by Tharun Shastry L

Infrastructure when developed properly can make it easier for a developing nation to race ahead of the developed nations but as the government of developing countries lack resources this is not an easy task. This is what is happening with India. Tharun Shastry L studied the causes for the slow growth in the infrastructural sector of India. To overcome these challenges the Indian government has been coming up with new project delivery models out of which PPP is the most common and useful one.

This research paper has examined the various projects that have been completed under partnership and has evaluated the positive and negative aspects of PPP on the present project and has worked on to provide efficient PPP policies that can limit the consequences of the risks involved.

Table 2.3: Advantages and Disadvantages of the PPP Mentioned By Tharun Shastry L

Advantages	Disadvantages
Creates value of money and also focuses on the quality	Overall costs are reduced but there is an increase in the developing costs
Allows the involvement of private sector skills	As two or more parties are involved there is lack of coordination
Increases competition that in turn decreases the prices and leads to innovation	There occurs disbelief among the public and private sector because of cultural gap
Reduces the capital investment burden of the public sector	Main focus of private sector is profit maximization
Projects can be delivered quicker because of proper management	Corruption occurs as too many are involved in the project

He concluded that an effective PPP is required in India.

2.3.7 UNDERSTANDING THE KEY RISKS IN CONSTRUCTION PROJECTS IN CHINA by Patrick X.W., Zou, Guomin Zhang and Jiayuan Wang

They studied the main risks involved in the construction projects of China. Risks were prioritized according to the amount of influence they have on the project objectives and the project life cycle in terms of the cost, safety, time and sustainability. They also studied the risks that are faced by the stakeholders and the public sector and also the general public. They compared the risks analysed with the survey done for the same in Australia so as to highlight the common risks that occur worldwide and have equal impact on the infrastructural development process in every part of the world.

Construction projects mainly focused on road building are long and complicated processes which needs a lot of financial investment. The project incurs changes time to time because of the diverse interest of the different number of stakeholders present. Risks cannot be totally eliminated but when managed properly the efficiency of the project increases. Risks are assessed by the impact they create on the project objectives with the passage of time, hence using effective risk management techniques is needed to mitigate the risk and lessen its impact. The main risks identified by Zhang, Zou and Wang were the quality of the project and environmental sustainability.

As the project faces risks like low finance and unstable management the quality of the project is compromised and the road networks thus build may not sustain for the span they were intended to. Another risk factor that influences the project is the environmental risks that occur. Getting environmental clearance is the biggest issue and the toughest job. Building of roads need to clear a lot of forest area thus causing deforestation and the big machinery used also causes pollution. Therefore the concept of environmental sustainability came up. But it is not possible to construct roads without doing any harm to the environment. So it needs to be seen that minimum harm is caused keeping in mind the need and preferences of the local bodies also.

It was concluded that clients, designs and government bodies should take the responsibility and come forward to manage their relevant risks and work with mutual trust and cooperation form the problem identification phase itself to the problem solving phase to address potential problems and risks in time. Risks should be handled by those only who have enough knowledge about them and a separate committee must be created in order to handle the risks. Contractors with robust knowledge about the subject of construction and management should be appointed to look into the risks and minimize them and to carry out good quality and safe construction activities in future. This helps to increase the efficiency of the project and leads to the timely completion of the project with proper management of the funds received and also avoids bankruptcy.

2.3.8. CRITICAL REVIEW ON RISK MANAGEMENT IN PPP BASED INFRASTRUCTURE PROJECTS by Bansri Jethwa, Prof. A.N. Bhavsar, Dr. Shakil S. Malek

Developed infrastructure acts as strength of the nation and increases and sustains the economic growth, however, in India this development has still not reached a threshold level. The study done by Bansri Jethwa, Prof. A.N. Bhavsar, and Dr. Shakil S. Malek reveals that the infrastructural development projects in India cannot meet the set goals because of lack of scientific technology to assess the risks and poor management skills. The purpose of their research was to distinguish the risk management problems and give solutions to these problems.

The main issues involved that delays the project are problems occurring due to change in policies and law, delay in provision of permits and licenses and land acquisition. Thus PPP need to be understood clearly and the terms and conditions need to be interpreted properly prior to the beginning of the project.

Infrastructural development through PPP creates jobs for the citizens of India and also links the villages with the cities so that the villages are no more left behind and can go along the race of development. India is all about rural areas and thus PPPs projects being undertaken more can help to develop the rural areas in India and thus creating more development opportunities. Therefore it is necessary to mitigate the risks and have proper risk management which can improve the government ability to manage risk.

2.3.9. PUBLIC PRIVATE PARTNERSHIP IN ROAD SECTOR (NATIONAL HIGHWAYS IN INDIA) by Vijay Pal Singh Gill

The government has to focus not only in the development of road networks but has to also invest in other sectors. This creates a problem of deficit funds. Vijay Gill conducted a study regarding the inability of the government to meet the desired funds and the role of PPP in improving the situation and increasing the speed of development of national highways. In all the infrastructural sectors, the government has always faced a problem of filling gaps that occur between the needs of people and creation of funds.

Many risks that occur in the project were identified. Most of the risks were faced by the private sector. Private companies faced problems of safe designing the highway projects and difficulty in getting clearance from forest department. There were unforeseen weather conditions and geological conditions that lead to the delay of the project completion. It is not possible to control the nature caused disasters.

Sometimes there is less traffic on the tolls of highways this means that is gets tedious and difficult for the companies to recover their investment. Exchange rate also has a great impact on the project. Change of government largely affects the project because the new government can

either terminate the project or can impose fine on the project. As PPP projects last for 25 to 30 years the change of government affects it many a times. The bidding process is also not transparent. So he concluded that it is important to select a proper route for PPP.

2.3.10. RISK IDENTIFICATION AND ASSESSMENT FOR BUILD–OPERATE–TRANSFER PROJECTS: A FUZZY MULTI ATTRIBUTE DECISION MAKING MODEL by Sadoullah Ebrahimnejad, Seyed Meysam Mousavi And Hamed Seyrafianpour

There studied was primarily based on the increase finance received for the infrastructural development from the BOT projects in the Asian countries and the risks that these countries were facing in the completion of the PPP projects. As a new thing is introduced many complexities arise with it, the same that happened with the introduction of BOT. many complexities in the projects were seen because of variety that factor that influenced the projects trend and also the dependence of the project on the national factors. Due the presence of these complexities and the long term period of completion of BOT projects these projects meet with uncertainty and a numerous risks that have either direct or indirect impact on the project.

In this paper, the common risks involved on the BOT projects were identified and a hierarchical risk structure was presented to see the significance of each risk. BOT projects risks mainly had two aspects: Technical and financial risks and political, regulatory and economical risks.

These projects have initiating risks and these risks mainly occur because they are mega projects and need high and deep knowledge about each aspect. Thus the high risk involved with these projects mean that the decision makers and the public and private parties must pay special attention in analysing and managing the risks.

They a followed a simple process of managing the risks that involved three stages:
1. Risk identification and classification.
2. Risk assessment.
3. Fuzzy multi attribute decision making (FMADM).

The problem was defined in the Fuzzy Multi Attribute Decision Making (FMADM) field where the objective was to obtain the best alternative that had the highest degree of satisfaction for all the relevant attributes. It is used to tackle complex problems that occur due to the incomplete information that relates to the real world systems. This used many methods to rank the risk factors according to their relevance.

2.3.11. CONSTRUCTION DELAYS IN HONG KONG CIVIL ENGINEERING. PROJECTS by Tommy, Y.L., Ivan, and Karen

From the survey of the construction projects in Hong Kong it was found that construction delays are common there which result in increased project costs and inevitable contractual claims. The

study was primarily aimed at gathering the data based on the practice of the contractors to deduce what were the causes of delays and whether the suggestions given by the members of Construction Industry Review Committee that constitute of knowledgeable persons with good experience in their related fields are true and applicable to and are effective at minimizing the delays with reference to the ranks given to the risks according to their relevance using the mean score method.

They looked whether the project was efficient in terms of their output quantity and the quality of work being done is optimum. They also considered whether the project was environment friendly and provided site safety and workforce safety. The survey also took into account the extent of difference between the views of the different respondent groups involved during the study of the issues using rank agreement factor and percentage agreement. The difference that was seen on the reasons for delay in projects was also examined.

Table 2.4: Causes of Construction Delays

CAUSES OF CONSTRUCTIONAL DELAYS	Lack of transparency in contract
	Poor site management
	Lack of needed capital
	Low price bidding
	Inexperienced contractor
	Poor dispute resolution
	Lengthy documentation procedure

The result of the study showed that a strong census was found on the significance of the above mentioned causes for delay and these findings can help to improve the productivity and overall performance of the construction activities.

2.3.12. EVALUATING SCHEDULE DELAY CAUSES FOR PRIVATE PARTICIPATING PUBLIC CONSTRUCTION WORKS UNDER THE BUILD-OPERATE-TRANSFER MODEL by Jyh-Bin Yang, Chi-Cheng Yang and Chih-Kuei Kao

The amount of investments in public road construction works has increased significantly due to the use of BOT method for project delivery. There has been a worldwide increase in the use of BOT model for completing the infrastructural projects. Although the application of BOT projects has increased significantly but some projects encounter major problems as the project advances and is in middle of its completion phase. If the problem occurred at this stage becomes a major risk it results in loss of money and also the resources.

This study was aimed at to identify the delay causes in various stages of BOT projects. To know the impact, questionnaires were prepared that were given to the BOT participants and there replies were examined. The outcomes of the study were analysed using the traditional statistical

methods and structural equation modeling method. The main causes that were highlighted during the analysis of the questionnaire were improper contract planning, problems arising due to debt, uncertainties arising due to political issues and government interference.

The result of the study revealed that the stage of 'signing of the agreement and negotiation between the parties involved' was the most essential stage in which the causes inferred from the study were the most prevalent. One more reason for the delay was government finished items. The debt problem significantly increased because of the delay of the project and the non refund of the fund investment due to delay in operation of the project. This increased the burden on private firms due to lack of repayment of bank loans and the pressure from local governance to complete the project adds to the adversity of the situation. This study showed that if the causes of delay were identified timely and at the right stage the postponement of the BOT projects in future can be prevented and also additional costs that can occur in future due to delay can be minimized.

2.3.13. COMPARISON OF INDIAN PPP CONSTRUCTION INDUSTRY AND EUROPEAN PPP CONSTRUCTION INDUSTRY: PROCESS, THRESHOLDS AND IMPLEMENTATION by Louis Gunnigan and Renuka Rajput

There has been a rapid rise of PPPs across the world. Governments are supporting PPP to bridge the infrastructural gap that has been prevalent from a long time. Louis Gunnigan and Renuka Rajput considered that PPPs are seen as an important tool for accelerating and increasing the infrastructure investments and mitigating the problems caused due to infrastructure deficit. They argued this reason to be the key factor for the keen interest of the developing and developed countries in PPP models. There paper compared the procurement process of Public Private Partnership followed in Europe and India and presented a thorough review on the issues involved in the construction process that leads to delay and also the choices made by the government of both the nations. It looked upon what additional challenges face in the procurement process.

Comparison was done on various social, political, technical issues involved in the construction of road networks and other infrastructural projects and the paper involves study of the different type of PPP models used for different sectors in Europe and India.

Table 2.5: Comparison of PPP in Europe and India

COMPONENTS	EUROPE	INDIA
Social	The initial phase went slow in Europe but now Europe is implementing the PPP model in all sectors.	There are still many sectors untapped in India due to disputes with locals, less funds and lack of knowledge and management of the subject.
Legal Framework	The legal issue is the major cause for delay in projects here as all the EU members have to agree on the project and each has its different legal system, thus arises many contractual disputes.	The Indian government is making many efforts to improve the regulatory framework and policies and also ease the clearance process on environment, defence, land acquisition etc.
Economic	The European International bank funds most of the projects. The private partner bears the some of the risks.	Indian government is promoting PPP projects because these lessen the burden of the government.
Environmental	Europe has comparatively well developed environment control region as compared to India.	India is encountering problems due to environmental sustainability. This factor is closely related to the political and social risks involved.
Technological	There is prevalence of large construction companies.	India does not have a good number of expert contractors.

It can be said that the current global financial crisis is also having an adverse effect on the funding capacity of the firms. Also Europe is facing a fiscal problem. Fiscal problem in any nation has an impact on the other nations as well. So India needs to learn from the experiences of other developed nations so as to get benefits in long term.

2.3.14 PERFORMANCE ANALYSIS OF NATIONAL HIGHWAY PUBLIC PRIVATE PARTNERSHIPS (PPPS) IN INDIA by Nagesha G and K Gayithri

PPP is the new most widely accepted model for infrastructural because of its quality of ensuring cost effectiveness and providing a risk assessment method and also avoiding time overrun. The research paper by Nagesha G and K Gayithri has observed the performance of national highways in Karnataka. The framework of the study consists of review of the projects depending on three main factors that are time overrun assessment, forming a matrix of risk management and responsibility and estimating the quantitative and qualitative aspects of value for money.

It was found that time overruns can deliberately occur in work in traditional contracts or EPCs because these benefit the private sector as the total responsibility and the additional costs incurred from time overrun is the sole responsibility of the government. On the contrary, the risks and costs that appears because of the time overruns is shared by the public and private sector in PPP projects. This is so because the returns of investments occur only when the project has been completed.

The study revealed some of the reasons responsible for time overrun. Vital causes were land acquisition issues, delay due to government approvals, limited financial resources and limited accessibility to raw materials and lack of modern equipments. Performance analysis was done to measure the qualitative and quantitative aspect of value for money.

The study concluded that there is need for more evaluation of the operation and maintenance phase with proper installation of road tolls and barricades and regular monitoring of the project is needed. These all measures tend to improve the quality of road networks.

2.3.15 PPP IN ROAD SECTOR: A STUDY ABOUT INDIA by Ms. Ruchi Sharma

PPP can be defined as the transfer of projects involving huge investments to the private sector who were formerly executed by the public sector. The success story of the infrastructural development in India can be credited to the widely accepted use of PPP models. The main reasons for adopting the PPP model for the development of road sector was the need for large investment for infrastructural development and the value addition that occurs due to better management of project and innovation that comes up with time. Even after so many models were deployed there still occurred many problems in these projects which either lead to the closure of the project or it was delayed.

This suggested the further reason to study about the reasons for underperformance of these models which was conducted by this survey. The study mentioned the issues that arise in both public and private sector.

Public Sector faced many problems because of the involvement of politics where the ministries influenced the process of decision making and there occurred many hurdles regarding financing. Public sector policies were also very rigid that make it difficult for the private sector to participate fully. Another reason that leads to ambiguity is due to the unwanted control exercised by the public sector on the private sector employees.

Private Sector believes in profit maximization so this causes a wrong impression on the public sector which thinks that private sector will not provide good quality work. Private sector sometimes recruits under qualified employees for the job to cut costs which leads to the mismanagement of project and also lack of expertise knowledge in the project. Public sector understands the social needs more and this behaviour lacks in the private sector organizations.

As it can be seen that PPP is an important tool for the development of the nation it is important to solve these issues. Presently the government is taking steps to bring together the goals and objectives of the public and private sector so as to reach the milestones and to create new opportunities. Road network is considered the base to lead the country towards economic growth. The government has also put forward campaigns like Make in India that are promoting the participation of private sector from not only within the nation but also from foreign countries.

2.3.16 RISK ASSESSMENT OF BOT PROJECTS by Sharmila Mane and Dr. S.S. Pimplikar

Sharmila Mane and Dr. S.S. Pimplikar studied the reasons for the slow growth of the infrastructure sector in India as compared to the other countries and as a comparison with the other sectors in India which are flourishing more like manufacturing sectors and industrial sectors. The main reasons for economic bottleneck in India are the slow transportation growth because of few road networks and insufficient supply of water and energy. BOT has given many new opportunities to the private firms in India as well as for foreign investors.

Therefore it is crucial for the private sector and the foreign investors to identify the risks and manage those risks that relate to the investments in BOT projects in India. The risks identified in the study were classified into three main categories; financing, technical and political risks.

The project success depends on the correct estimation of the costs incurred, duration of the project and the quality of the end product or services received.

Table 2.6: Parameters of the Risks Divided into Subparts

PARAMETERS	SUBPARTS
Financial Risk	It comprises of currency risk, interest rate and tax rate, commercial risk and foreign exchange risk
Political Risk	It consists of country risk that has diversity in its population and working and sovereign risks relating to loans
Technical Risk	Technical risk can be because of the construction risks and he operation and maintenance risks

They gave some risk response strategies that can be used to avoid the risks that occur in the project life cycle. Some of the strategies are:

Risk avoidance is done by changing the project plan to minimize the risk to protect the project objectives.

Risk transfer does not eliminate the risk but shifts its responsibility to other management teams which can properly handle the risk.

Mitigation acts in a way to reduce the adverse effects of a risk that involves taking an early action.

The study resulted in ranking the risks in terms of their importance: delay in the approval of project, frequent changes in the law and policies, cost and time overrun, land acquisition, long term contract schedules, traffic monitoring and environmental clearances. It also gave some mitigation strategies that have been already explained above.

2.3.17 PUBLIC PRIVATE PARTNERSHIP IN ROAD SECTOR IN INDIA by Ramakrishna Nallathiga and Mona N. Shah

The private sector was attracted into the road sector by adopting various models, one of the main being PPP. Ramakrishna Nallathiga and Mona N. Shah studied the wide spectrum of PPP models and deduced the advantages and disadvantages of the PPP model.

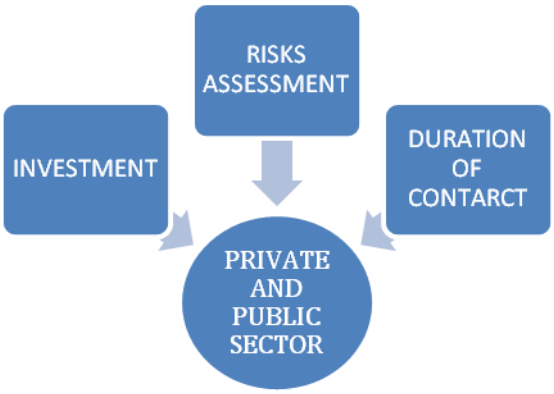

Figure 2.1: Spectrum of PPP Arrangement

They discussed some of the issues and challenges faced by the road and highway development projects which has led to uneven performance. Some issues are related to the structural issues and some to behavioural issues. The issues studies by them are as follows:

Systematic issues including problems like delay caused by the policies, decision and finances that belong with the government authority. Large road projects need a lot of land and thus lead to loss of forests and wildlife. All this leads to the problem of land acquisition. One more reason is the involvement of different type of ministries for the authorization of project. Each ministry has a different style of working which causes problem in working of the private sector.

Structural issues include problems caused by lack of long term finance because of which some projects are delayed and some are terminated long before the time of completion. Many legal and technical risks also hinder the process of completion of project. As it is known that resources are limited in nature and therefore it is very important that proper allocation of resources is done.

Behavioural issues comprises of the lack of interest of the private sector to understand the needs of common man and also the competition level has increased because of which many new firms are entering the market which are either less experienced or have no experience of the field. This also leads to poor quality of work and improper time management. Also many a times BOT models are over engaged and other models like annuity models are neglected.

2.3.18 PUBLIC PRIVATE PARTNERSHIP IN INDIAN INFRASTRUCTURE DEVELOPMENT: ISSUES AND OPTIONS by L. Lakshmanan

L. Lakshmanan stated that a serious concern in India is the bottleneck in infrastructure that hinders the pace of growth and also prevents it from being one of the biggest markets in the world. He also stated that physical infrastructure is central part for the economic development and that also generates source of income for people. But in the modern context PPP has a small share in the development of road networks and infrastructure in India despite of the formation of many policies that ease the business doing process that involves PPP. The main focus of the paper is to justify the extent of participation of the private sector in the infrastructural development. It raises issues involved in the delay of construction of road networks and also put forwards some measures for the problems that arise in PPP models and ways to increase the participation of private sector in these models.

The issues that were presented in the paper were concerned with the lengthy documentation process, the transparency involved in the contracts, poor risk management, lack of justified and deliberated governance etc. many of the projects are postponed or delayed because of some litigations or obligations that occur in the project that lead to increased cost and time overruns. One more issue that needs immediate attention is regulatory independence which is important for policies implementation because there are many disagreements between the different authorities present. These issues need prior attention and detailed study so that there in increased interest of participants and investors in the PPP projects. In addition there is a need for good governed framework that can adhere to the frequent changes in policies and friendly policies that can help to take advantage of the PPP models and ease the process of completion of projects.

2.3.19 A VALUE FOR MONEY ASSESSMENT METHOD FOR PUBLIC PRIVATE PARTNERSHIP: A LESSON FROM MALAYSIAN APPROACH by Takim R., Ismai K. and Nawawi A.H

Money value in PPP projects is the optimum combination of the cost involved in the complete life cycle and the quality of meeting the users' requirements. If the term is looked upon one may

consider that it only follows or explains the financial aspects of an object or element of the project but it also considers the non-financial evaluation terms.

Takim R., Ismai K. and Nawawi A.H. studied the different type of approaches available to assess the time value of money applied in several countries. In the previous research done value of money aspect has been criticised because it was thought that it was incapable of calculating the properties of an element to assess the risk transfer and its limited use in non-financial aspects. But this concept was overruled in this research paper which analysed value of money in terms of the bidding done for the contract and identifying elements at all stages of PPP that signify the value of money.

The results of the research reported that in PPP projects the value for money starts at the initial stage, the strategy formulating phase, and is carried and assessed throughout the life cycle of the project. The paper highlights two important things related to VFM. Firstly, need for establishment of a group or set of criteria that can be used to evaluate the PPP bids with the VFM process. Secondly, identifying and evaluating the elements in the project life cycle that are related to VFM.

The study concluded that there are some important elements that are needed for PPP evaluation in relation to VFM process. Some of the elements are financial aspect of the project, time, risk assessment and management, innovation, looking into the users' requirements, environmental issues, ease of operation and health & safety. The study gave six criteria of PPP bidding for VFM: optimum total life cost involved, innovation in the phases of operation and maintenance, fitness for the problem defined and purpose, detailed specifications, value of time and innovations in the work brought about by use of new technology. It was found that the respondents strongly agreed to the fact that both the financial and non financial aspects are necessary items to be assessed in VFM process at all phases of PPP project life cycle.

2.3.20 CRITICAL SUCCESS FACTORS FOR PUBLIC–PRIVATE PARTNERSHIPS IN INFRASTRUCTURE DEVELOPMENT by Xueqing Zhang

Xueiqing Zhang studied the different types of PPP models that been in use around the world and the various problems that arise with the use of variety of models. It was found that a number of factors were responsible for the success or failure of a PPP project based on its objective and use of model. He signified that there was an urgent need for a workable and progressive protocol for improving the practices in future PPP projects. The study identifies and categorizes numerous critical success factors (CSFs) for PPPs depending on their impact and discovery.

There was felt a need for a working protocol that is clear, easy and efficient for improving the practices followed under PPPs. This study identified and analyzed the various Critical Success Factors (CSFs) and categorized them depending on the extent of application in the PPPs. The

research followed a systematic approach and a principle called as public-private win-win theory with the expert view of the correspondent groups.

Table 2.7 Critical Success Factors and Sub Factors.

CRITICAL SUCCESS FACTOR	SUB FACTORS
Environment favouring investments	Stability in the political system and government Support from the community and government Public interest being taken care of
Economic viability	Long term demand of the services and products of the project Minimum amount of competition from other firms Availability of resources and cash for the continuous operation of the project
Reliable concessionaire and transparency in contract	Effective and main role of the organization and entrepreneurs Strong technical skills and efficient project management Many participants with knowledge of different fields
Risk allocation	Need for appropriate risk allocation in different agreements regarding supply, lease, design, loan etc.
Appropriate financial packages	Proper and detailed financial analysis Minimizing financial risks by using stable currencies for analysing debts Fixed and low interest rates and appropriate toll tariffs adjusted according to the need

The significance of CSFs has been felt in order to minimize risks and increase the output.

CHAPTER-3

RESEARCH METHODOLOGY

The research methodology includes both qualitative and quantitative aspects of the study done. The research includes identifying the risks involved in the construction cycle of the BOT projects for road sector which include building of national highways, expressways, link roads etc. it further talks about the affect of these factors on the project delivery time and costs.

The research methodology was carried out in three phases. The first phase defines the problem and identifies the risks. The second phase is based on the methods of collecting data and lastly the third phase deals with the research process.

3.1 ORIGIN AND DEFINITION OF THE PROBLEM

The risks with the BOT projects have increased with its advancement in the market and lead to cost and time overruns. The problem that is defined in the study is the impact of the risks on the construction project and the rank of significance of the risks. Data collected from public and private sector through the study of the material available shows that there is need of deep study of this subject.

3.2 METHODS OF DATA COLLECTION

Two types of data collection methods were followed. Data was collected from primary sources and secondary sources.

The sources of collection of primary data are as follows:

1. Studying various literature, journals, books and documents available in the library.
2. Studying articles, publications, project reports of various researchers regarding risk assessment.
3. Referring to reports in Business magazines and newspapers.
4. Referring to different Government of India documents and surveys for facts & figures.
5. Referring to published Statistical Data for Research.
6. Consulting Government of India website for PPP projects.

The sources for secondary data collection are:

1. Distributing questionnaires to experts related to these fields.
2. Observations made from the questionnaires.

3.3 RESEARCH PROCESS

The research process begins with a detailed study of the theories and researches done by many experts and researchers in the Risk Analysis of BOT Projects. The inference made from the study

of the theories concluded that there are eighteen risk factors which constrain the projects from timely completion. These constraints have been classified under four main domains, each domain signifying a phase in the project life cycle. These constraints can be summed up as:

3.3.1 Risks Involved in the Prequalification Phase

The prequalification phase is the initial phase that involves documentation process and definition of the project. It involves bids for the projects and forecasting the requirements of the project. The main risks that are associated with this phase are lack of interest of the investors in PPP projects, wrongly conducted survey about the traffic volume, improper project identification and the change of government. These constraints are also called as political and policy constraints. The different stages of policies are not defined properly and there is lack of proper framework that can generate possibilities of profitability. There is lack of government support and the continuous change of the government interrupts the decision making power of the private sector.

3.3.2 Risks Involved in the Tendering Phase

The tendering phase deals with the obligations and litigations of a contract. This phase sometimes lack transparency in the contract and even many a times the contracts are one sided supporting only one party and listing only those points that favor one party. Also there is insufficient transfer of commercial risk and many investors lead into aggressive bidding and getting projects at lower price. Here one major constraint is the legal constraint.

3.3.3 Risks Involved in the Construction Phase

This is the face where the actual works begin. Here the machines and equipments are used and this phase leads to loss of land and forests. Risks that mainly occur here are land acquisition and clearances from the environmental department defense etc. the procedure for getting clearance is very lengthy and time consuming and involves lot of paper work. If a project is being constructed from one area to another then there can be different demands of the ministries present in those areas which cause delay in the project construction. This phase also phases the problem of financial crisis. The debts may increase and the fund may run out. Financial risks arise due to lack of budget and because of under development bond markets etc.

3.3.4 Risks involved in the Concession Phase

The concession phase faces risks of inappropriate risk allocation. The risks are not identified timely and the management of these risks is very poor. This occurs because of lack of proper project management and neglecting some stages of the project. Another constraint that arises over here is the social constraint where the public is not supportive or refuse to give land to the contractors. This also arises because of lack of knowledge about programs being undertaken.

Change in foreign policies or not using a stable currency for debt financing also adds to the problems.

3.4 RESEARCH METHODOLOGY PROCESS

3.4.1 Formulation of the Questionnaire

To know the impact of the risks on the project deduced from the study of the literature review questionnaires were formulated and distributed. The questionnaire comprises a list of the risks or constraints and measured them on a five point Likert scale from 1 being very low, 2 being low, 3 being moderate, 4 being high and 5 being very high. This scale is used to in this questionnaire because of its ease of understandability and because of totality it offers in its simple means and it gives a clear view of the agreement or disagreement of the respondent. The questionnaire is designed to study the views of respondents on the extent to which these risks affect their projects.

Figure 3.1: Flow Chart of Methodology

3.4.2 Method of Analysis

This research uses RII analysis method to infer about the impact created by different risks involved in the project. RII method was used to test the reliability of the scale. RII is used to rank the constraints. The following formula is used to carry out RII analysis:

$$IMPI = \frac{FI \times SI}{100}$$

RII→ Relative Importance Index
FI→ Frequency Index
SI→ Sensitivity Index

The important index techniques are:

1. Frequency Index- used to rank causes based on the number of times a risk find its place in the table as defined by the participants i.e. the frequency of occurrence.

$$FI = \sum a\left(\frac{n}{N}\right) * \frac{100}{m}$$

FI→ frequency index
a→ constant weighting given to each response(1 to 5)
n→ frequency of response
N→ total number of responses
m→ maximum value of scale here it is 5

2. Severity Index- used to rank the causes of delay bases on the severity of the risks as given by the participants. Te formula used is

$$SI = \sum a\left(\frac{n}{N}\right) * \frac{100}{m}$$

SI→ severity index
a→ constant weighting given to each response(1 to 5)
n→ frequency of response
N→ total number of responses
m→ maximum value of scale here it is 5

Table 3.2: Rating Of Risks from RII Analysis

RII VALUE	IMPACT
0-0.20	Not Critical
0.21-0.40	Fairly Critical
0.41-0.60	Average Critical
0.61-0.80	Very Critical
0.81-1.00	Extremely Critical

CHAPTER-4

BUILD-OPERATE-TRANSFER AND ITS ISSUES

4.1 INTRODUCTION TO BUILD-OPERATE-TRANSFER (BOT)

In this type of model, private party is given responsibility of building infrastructure (like roads), operating and maintaining it for a fixed duration of time. Government in this case does not have responsibility to pay to contractor as the private party earns their invested money and profit through toll collection as the project is usually granted for 10 to 30 years, and after this the project is finally transferred back to government.

Design build operate transfer is a type of construction project financing, where a private entity obtains an allowance from public or private sector for the purpose of financing ,planning, construction, and operation of the facility stated in the concession contract. This enables the project promoter to the investment invested in the project and also operating and maintenance expenses in the project.

Because of the long-term arrangement of the contract, the fees are usually elevated during the concession period of the project. The rate of increase is often tied to a combination of external and internal variables, allowing the supporter to reach a reasonable internal rate of return for the investment occurred in the mode of collecting the investment from the project is toll; a toll barrier is set up with a specific number of transaction windows that collect the tax. After a period of 10-30 years when the tax had been collected and the investment along with the profit is incurred then the toll barriers are removed and the services are available to the consumer as free of cost.

Different types of PPP projects:

4.1.1 BOT (Build-Operate-Transfer) Annuity

In BOT annuity model, private party is responsible for construction of project and operates it for a specific duration of time but the difference comes in terms of payment of project. Under this model, payment to developer will be made on six-month basis after the launch of commercial operation of project. This de-risk the commerce and reduces the chances of the losses occurred in the project that are to be face by the operator to a large extent.
The toll system of collecting the investment by the contractor is not applicable here as the work charges incurred are given to the contractor by the government annually. So, the tolls are collected by government itself. This reduces the corruption but the contractor and unwanted expenses by the contractor.

4.1.2 BOLT (Build-Own-Lease-Transfer)

Under this approach, concessionaire builds the project, owns it and then leases the facility to another private party for a specific period of time. As the lease time ends the project goes und government.

4.1.3 BOOST (Build-Own-Operate-Share-Transfer)

In this model, concessionaire deals with the financing, constructing, operating and maintaining the project, the difference with own word is this, that the private party can use any means of methods in construction and operation of project. Here also the proponent can recover its money and profit by collecting tolls, fees etc. from the users.

4.1.4 BOO (Build Own Operate)

Under Build Own Operate, investor or private party finance, construct, own, operate and maintain the infrastructure and does not have any responsibility to transfer it back to government but the government holds the ownership of assets made so it can be a financial risk to private party. In this case also the investor will gain its spent money and profit on project by collecting tolls, rentals or fees from users.

4.1.5 ROT (Rehabilitate-Operate-Transfer)

In this model, private party is given privilege to restore or rehabilitate an old project as per specifications made by government and then allowed to operate the project for given period of time in which the concessionaire can recover money and after given period of time the project is returned back to government.

4.1.6 DBFOT (Design Build Finance Operate Transfer)

In this type of project a single contractor is awarded the project and all the aspects of the project including the operation of the project for a pre-specified duration. The finance for the project is collected by means of either investment as in health sector investment or by means of partnership as in case of schools and public works known as “special purpose vehicle”. The servicing outputs are enlisted in the contract. However, the building product is not listed under any restrictions and conditions. As the financing is done using special purpose vehicle the immediate risk is distributed over time but has to be paid by the client.

4.1.7 DBFOT (Design Build Finance Operate Transfer Toll)

It is similar to the DBFOT type project with a slight difference that the project cost is recovered through tolls. The project is transferred to the client after collecting the investment.

4.2 PARTIES IN BOT PROJECTS

There are various types of major parties that are involved in a BOT project. All these parties related to the BOT projects have a specific reason doe their involvement in these projects. The contractual undertaking between these parties and the risk allocates with them can be complex.

The major parties involved in a BOT Project generally include:

1. Government Agency

The role of a government department or a statutory authority is very significant in a BOT project. The Government agency is usually the primary party. It will provide assistance in the following cases like

1. It will grant sponsor the concession that is the right to build, own and operate the facility for the specified period of time.
2. It also assists to grant a long term contract of the site or sell the site to the sponsor.
3. The government agency often acquires most or all of the service provided by the facility.

The co-operation of government is very crucial in large projects. The mandatory approvals and clearances in such projects require a major help from government agencies for the assembly and operation of the projects. It is also required to ascertain that the facility received from the services by the agency should be in the state of honoring its financial obligations.

The government agency will first of all initiate the project, organize the process of tendering and evaluation of tenderer's and grants the sponsor the concession. The Government Agency's power to involve in the documentation related to an infrastructure project and furnishes its commitments and the ability in which the agency enters the documents is a very crucial issue.

The policy of ultra vires is largely beside the point to the companies, as the Corporations Law provides that they have the power to act as a natural person and have its own identity, subject to any express prohibition in a company's integral documents. However, this is not so for constitutional authorities. It is settled law that a constitutional authority instituted under legislation has only the powers for which its constituent legislation provides. Hence, its required powers and functions must be vast enough to enable it to enter into each of the projects document to which it is a party and perform its responsibilities. To govern whether a government agency's actions are ultra vires or intra vires, it is important to thoroughly examine the prescriptions under which the authority is established.

2. Sponsor

A sponsor in a project also plays an indispensable role. It is a party, generally a consortium of groups interested (including a construction group, a financial organization, an operator and other different groups) which in return to the invitation by a government division, prepares the offer to construct, function and finance a particular project.

A sponsor can be a company, a unit trust, a partnership or an unincorporated joint venture. Equity investors or equity provider is a term generally used to refer to investors in the sponsors. Equity investment usually comprises upto 20% of the cost of the project. To compensate for assuming the considerable risk inborn in an infrastructure project an equity investor may require a return of about 20-25% in today's market. Therefore as a result for equity to be much less than 20% of the project cost may be considered as cost-efficient.

3. Construction Contractor

A construction can also be one of the guarantors. It will take the responsibility of construction and risk of completion of the project on time within the budget and as per the specifications. There may be potential risk and the lenders will wish to hire a construction company with a balance sheet of appropriate size and effectiveness with right to use the resources that will give real significance to its completion surety.
The over-all design of the infrastructure is commonly dictated by its skilled utility and the construction risk is then exhibited by the construction company. Further, the commissioning risk is often allocated to the construction company, conditional to the nature of the infrastructure. The sponsor will focus on the fact that the construction company enters into a fixed price fixed time construction contract. Nevertheless, this is rarely entirely achieved, as there is commonly some timing or cost issues which are not taken into consideration by the construction company and can lead to disparities in price or timing.

4. Operation and Maintenance Contractor

It is generally expected that the operator signs a long term contract with the sponsor regarding the operation and maintenance of the facility. The operator can also insert equity into the project.

No shortage of operators has been examined, mainly from offshore, for planned infrastructure projects. This possibly has a lot to do with the fact that the operators incline to accept little risk in the form of beforehand capital or expenditure. An operator simply foresees making a profit from operating the infrastructure more effectively than an identical government run project.

5. Financiers

In large projects there is a probability of participation of a group of individuals or organizations of banks that provides the debt funds to the sponsor. The banks will first need a security over the infrastructure created. The banks (whether same or different) will often furnish a stand-by loan facility for any cost overruns not covered by the construction contract.

Since the BOT structure financing projects is a form of project finance, debt financiers will undertake a appraisal of all central project documents to determine the impact of risks and how that allotments impacts upon their credit sanction. Some difficulty has been observed in attracting debt financiers for projects pertaining to infrastructure, predominantly because of the long term nature of the repayment of the bank debt, which may have a repayment period of 20 years, and the large number of infrastructure projects presently in the market place. Debt financiers conventionally see themselves as short term financiers. Hence, they are only comfortable financing the construction phase of an infrastructure project, on a condition that they have a privilege for the long term repayment phase of 15 years or more. The size of the debt required for many infrastructure projects may also be a reason for limiting the number of willing financiers. Moreover, tax exempt infrastructure bonds are only available to limited types of infrastructure. For example, infrastructure bonds are available to land transport, seaport and electricity generation whereas not available to water and heath projects.

6. Equity Investors

It is mandatory to ensure that recommended nominees in an infrastructure project have adequate powers to enter into the significant contracts and perform their commitments under those contracts. Illustrations where these powers must be cautiously scrutinized are life trustees of superannuation funds and insurance companies.

7. Other Parties

Other parties which are involved are insurers, engineering and design consultants and equipment suppliers Most of the parties also involve their lawyers and financial and tax advisers. Other parties which can also be involved in an infrastructure project include equity providers, equipment suppliers, insurers, fuel suppliers and the consultants.

4.3 STRUCTURE OF BOT PROJECTS

In a BOT project, the public sector or the government grants rights to a private company to develop and operates a facility for a certain period of time. This time period is known as the Project period. The private sector designs and builds the infrastructure, invests in the project and ultimately operates and maintains it for a period of time, which can be long as 20 years or 30 years. This period is sometimes also referred to as the Concession Period.

The operator i.e. the private company owns the project and operates it commercially for the concession period and after that the project rights are transferred back to the concerned authority. BOT relates to new build and is the typical structure for the project financing. BOT has no other revenue stream from the start of the project. The operator here is usually a special purpose vehicle. The revenues are produced from a single offtake purchaser which most of the time is the government, who purchases the output of the project. This leads to an agreement between the concessionaire and the government. A minimum payment is required to be paid by the offtake. The project company is a special purpose vehicle and includes shareholders which may be companies with construction and operation experience and even experienced managers of such BOT projects.

The chart below shows the contractual structure of a BOT project. It includes various agreements from lenders to shareholders and various subcontracts of the construction contract.

Figure 4.1: Contractual Structure of BOT Projects

4.4 ISSUES IN PPP

The past 15 years have seen an increase in the use of PPP method for project delivery. Most of the projects under PPP framework are developed under BOT- Build Operate Transfer business structure. The main reasons for the preference of BOT projects are its cost-effectiveness and efficiency as well as the transfer of risks that occurs from the public to the private sector. BOT projects have succeeded in many business projects in spite demographic and geographical differences prevail in India.

Unfortunately, despite of the success of large scale BOT projects in India and availability of many successful examples of PPP projects in different sectors like infrastructure, transport etc. projects are being aborted in middle of its life cycle because of unavailability of desired funds or lack of interest of the private sector in participating in such projects due to non-transparency in the documentation process and contracts. The type of risks that a BOT project faces depends and varies with the nature, size and location of the project. The risks may vary and may be never ending but these risks occur mainly in three phases: initiation, implementation and operation. Progress of the project is linked with the occurrence of risks in its life cycle.

Many issues have been haunting the projects and causing constructional delays that have been decreasing the returns and increasing the costs. The issues that come up in the BOT projects are mainly because of the internal risks and global risks the project faces. Global risks are the risks that source from external origin i.e. the project environment. The internal risks are also called as the elemental risks that originate from sources present within the project with merge with the elements of the project and create many issues. Global risks may arise because of the intermediate turnover of the foreign investors or the risks that arise from the surrounding environment of the project which consists of the area of work, authorities and the public. These risks cause issues like decrease in the fund, difficulty of getting license and disputes that can arise with the public during the on-going work of the project which in turn create a severe issue of increased costs and delay in the project delivery. The elemental risks or the internal risks can be categorized as those risks that occur within the premises of the project. These can be employee turnover, poor risk assessment, land acquisition, lack of internal funds, diversity in management etc. These create many issues in the project which may seem small in the beginning but can create many adverse effects if not assessed timely. The most common issue that comes up with the internal effects is the disparity in the goals and objectives of the project. As a result it gets difficult to arrive at a common decision that the slow down the process of project building. Another issue that arises because of the internal risks is the addition of unwanted costs because of settling cases of land acquisition. The nucleus of the BOT project is the concession agreement which comprises of a number of variables that have impact on the project life cycle. Unclear or incomplete agreements may threaten the project's output and may also have negative and adverse effects on the investments if the investors fail to understand the terms and conditions and

are inefficient in interpreting the agreement correctly. Therefore it is important for the promoter to investigate the various risks in the BOT projects before making any decision. Risks also arise from the banks from the loan has been taken. If the global risks and the internal risks causes failure of project or delay in the project it can get difficult to repay the loan or payback the instalments. This creates a risk to the shareholders in the project company. The shareholders want good returns on their investment and their expectation are always high but with the increasing chances of risks it gets difficult for the shareholders to get expected returns. This may result in leaving of the investors and they may take back their investments that create funding problems for the project.

The most critical phase of the project is the construction phase. This is the phase where the equity and the borrowed funds are spent without generation of any return or cash flow and in which the technical and the economic conditions are prone to change at any instant. It includes delays in completion because of intervention from the government, licensing authorities, local people and lack of desired availability of power and water supply. Many risk can be seen in the operation phase that arise because of faults in machinery, wear and tear of equipments and technical faults that affects the performance of the labour, the contractor and delays the delivery. Both these risks, construction risk and operating risk are influenced by development risk. The increased competition in market has brought in new technology and in order to cut down costs and top the chart companies tend to use new technology that have not been yet fully developed and tested and thus these aggravate the complications and increase the operating and completion risks.

Commercial risks involve the risk that arise from the supply and sales and as well as the currency. Inadequate and constantly changing selling and buying prices as well as choice of a currency for making transactions effects the production and promotion of project. Political risks are difficult to avoid and one has minimum say in these types of risks. They can be because of state intervention as a road project may involve the building of a highway between two or more states. Other risks that arise in the project are the issues regarding the agreement signed between the public and private sector. The operation and maintenance agreement governs the project power requirements and other requirements. Choosing experienced partner can help to assure continuous and uninterrupted supply of power.

This study revealed that the main issue in the development of BOT projects is land acquisition. So were the findings of other researchers Trivedi and Zhang. Land acquisition is a procedure by which the Indian government acquires land for the purpose of making roads, constructing buildings etc. and provides suitable compensation to the owner of the land and ensures that they are properly rehabilitated. Land acquisition creates a major problem to the private developers because prior to the acquisition of land the contacts are signed by the government with their private counterparts and this creates difficulties for the private company to acquire land afterwards and delays the completion of project. People refuse to give land and this halts the

project. Extra costs are added and disputes with the local public arise which creates tension in the project. Land Acquisition has been the major problem from decades and has led to the termination of projects. The governments responsible for the acquisition of land fail to acquire the respective areas and thus all the burden lays on the private sectors.

Another issue that arises is the change in demand of the various governments involved in the project. Each state requires a different facility and utility from the project and thus it gets nearly impossible for the private sector to fulfil the demands of all the states and thus it further delays the project completion.

Other risks that delay the construction process are improper project identification and clearances from the authorities. Project identification deals with defining the problem and purpose of the project and identifying and studying its areas of operation. This requires extensive study of the project and listing down the resources needed, capital to be borrowed, documentation process, benefits to be gained etc. Leaving aside any field under this can result into loss of money as well as time. One difficult job that comes along the project is getting clearances from the environmental departments. When a road is constructed many trees are cut down and due to increase of deforestation in India it becomes difficult for the private company to get clearances and also they have to pay heavy fines.

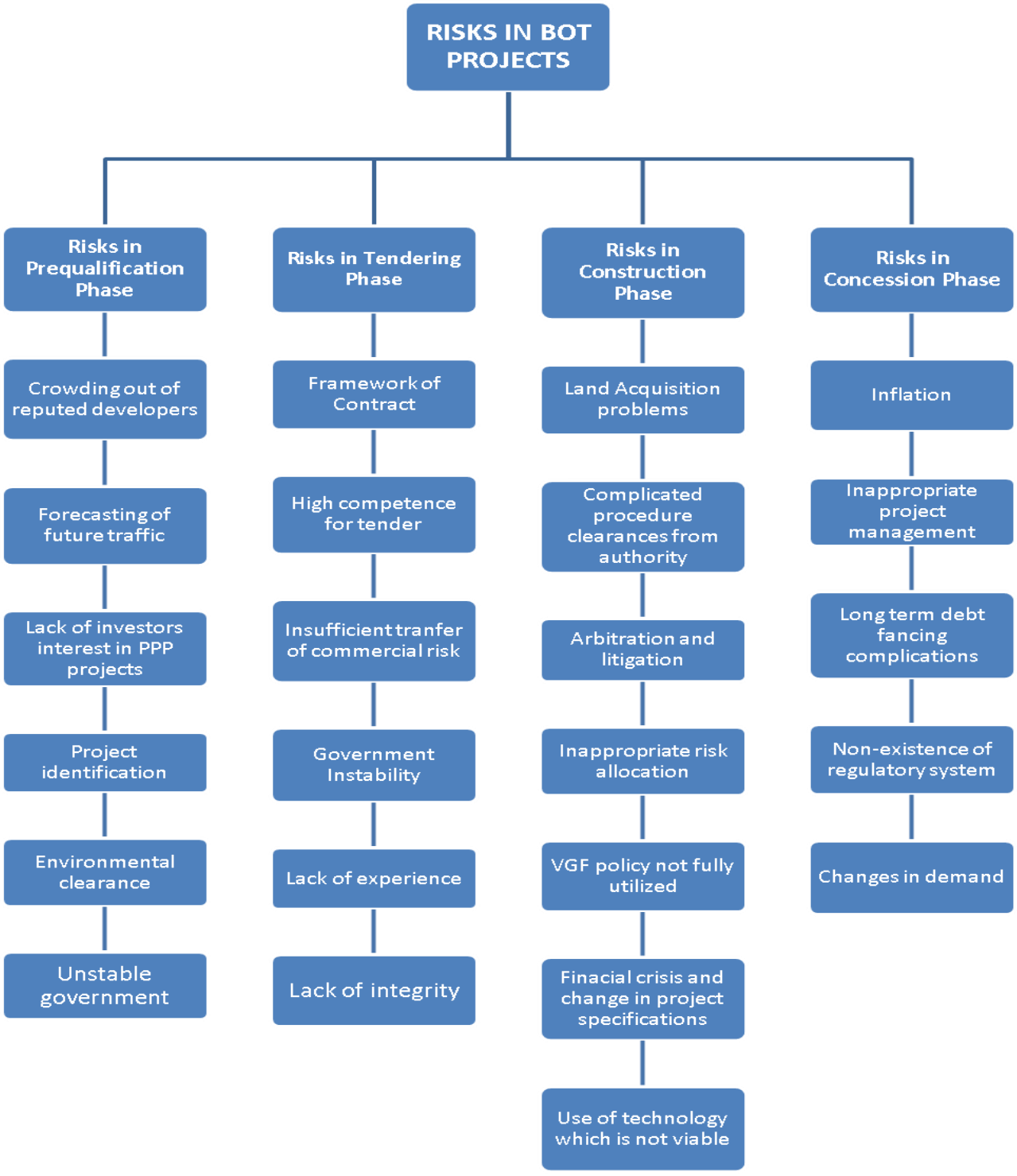

Figure 4.2 Risks in BOT Projects

The next important issue is improper forecast of future traffic. Forecasting future traffic means determining what will the amount of traffic or vehicles on the roads that are supposed to be built. It means estimating the amount of passenger vehicles and freight vehicles that can pass through the roads for a desired period of time may be one year and the load it puts on the roads especially the bridges and the flyovers. The estimation of the traffic is done by analysing the previous trends but it is not always found that the estimation done is always correct because if estimation is done for next five years and the project takes 10 years to complete due to some other problems then all the estimations go wrong and the traffic is estimated at a much lower value. This can be found where highways are turned into 4-lane from 2-lane and by the time they are developed as 4-lanes need for 6-lane has already been felt. Future forecast of traffic helps to cut down costs and take right decisions about the future requirements. Exhaustive surveys should be conducted.

The contract that are signed between the public and private sector can sometimes be biased and support only one party more i.e. the contacts developed by the government can favour the government more. This type of issue is called as one sided contract and is very common nowadays. This makes private sector more vulnerable to risks and thus results in lack of participation of good companies. This in turn creates another risk called as crowding out of reputed developers. Crowding out is an effect where private sector leaves the market because of much interference from the public sector. Crowding out of reputed developers occur because of the intervention of the political parties or the government because of which many contractors don't want to invest in PPP projects. The constant change in the policies also creates issues for the private developers and they tend to leave the project or show less interest in the projects. This happens because of the unstable government, each time a new government comes it tries to do things accordingly and this causes many new instructions and advices to enter the project. Even it may be a possibility that a new government would not like to fund the ongoing project currently and invest in some other project. To enter the market new companies are ready to take up the project at low price in the bids and this leads to the handover of project into inexperienced hands. This means the developers who had more knowledge about the field are out of the race and this trend bars them from entering into new deals. This shows that one risk leads to another risk. If anyone of the risk is not mitigated then it can lead into another risks and this causes projects to be either terminated or stalled. This is shown in the following diagram:

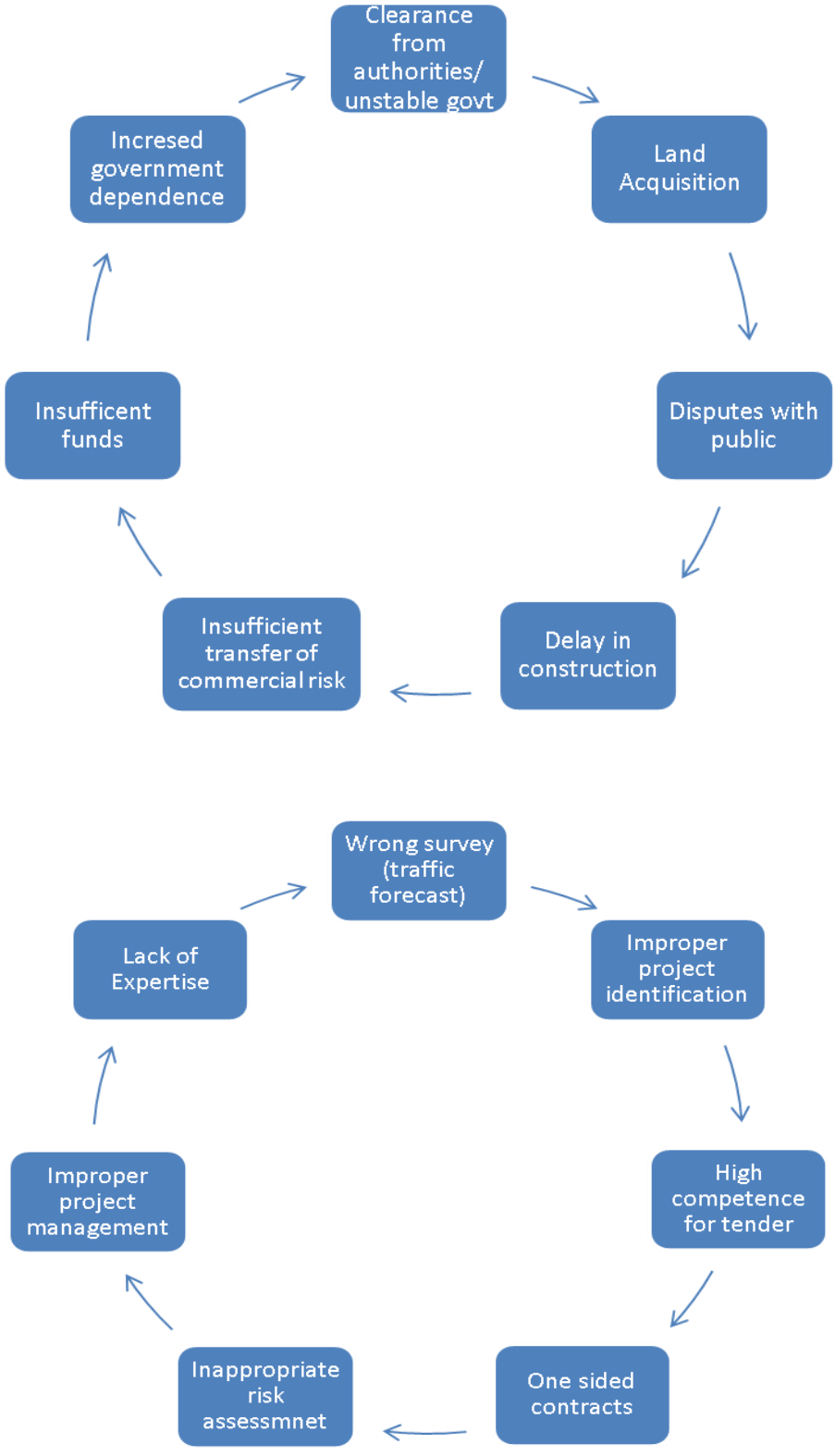

Figure 4.3: Relationship between the Risks/Issues in PPP-BOT Projects

Commercial risks are the risks when the partners in the project company refuse or are unwilling to give funds or pay money. Commercial risks are the potential losses because of the partners or market. These risks arise because of the variability in the decisions of the different persons on the project building team and there is no mutual agreement. This may also be looked up as disagreement or disbelief between the public and private sector. This makes the decision making process more complex and it gets very tough to reach to a conclusion and a solution situations of risk. Another type of risk is financial crisis. Financial crises occur when some of the financial assets lose their value and are devalued. This means that there is decrease in the share value of a project company which creates the biggest problem of lack of availability of funds. Another market risk is inflation. Inflation means sudden rise in the price. This makes the raw materials more costly. The fuel used in the machinery gets overpriced and more money has to be paid as rent and power supply bills. This also means increase in the labour wages and higher cost of buying new machinery. All this causes increased costs and decreased profits.

A dispute with the local bodies, environmental bodies, and public departments is very common. These can be solved by dispute settlement. Arbitration involves a third party to settle any dispute and litigation involves the court to settle disputes. This is a risk because to settle a dispute there needs money to be paid either as a bribe or as penalty which increases costs. Such cases when brought in the court are time consuming and have lengthy procedures. Apart from the risks from people, weather also has an impact on the project. Projects being undertaken in hilly areas face problems of heavy rainfall, snow and even landslides. The desert areas climate and hot temperature may also slow down the project building process. It is also important to take this factor into consideration.

Under estimation or ignorance of Viability Gap Funding (VGF) can also create a risk. VGF fills the gap between the funds one has and the extra funds one needs. Viability Gap Funding is one time grant given so as to support the infrastructure projects that fall short of financial viability. Financial viability falls short because of the long development period of plans in India and because of the inability to increase the share value. VGF should be utilized properly. Complicated procedure of getting long term debt financing is another risk that poses a threat to the project. Long term debt comprises of loans and financial obligations that end after one year. These consist of the bonds and loans. Long term debt is useful because they are provided for one year and their assessment starts after the year is completed. The procedure of getting these long terms debts is tedious and complicated. These are obtained either by entering the competitive bid or buying the coupons. Both requires time and patience and filling up of long forms. Also another major issue is corruption. As a project consists of many employees and there are different levels of management within a project dimensions corruption is a very common problem. The private sector employees may take bribes and compromise with the quality of the material used and use raw material from a non-trusted and unknown supplier. Even the public sector employees may take bribes and give the tender to the non-deserving party.

Unskilled and inexperienced employees also create a problem of delivery of quality end product and may even slow down the decision making process and make it difficult to make quick and correct decisions in a situation of difficulty. So it is important to keep a check on the management levels and there is a need to do risk assessment and management at each phase of the project.

4.4.1 Delhi-Gurgaon Expressway, India

The Delhi-Gurgaon expressway is a part of the Golden Quadrilateral project and has been built under the BOT model under the PPP framework. It is a 27.2 km long expressway and its work began in 2003. This project has enabled to cover the former 65 minute route in only 25 minutes. It was built in three phases: Phase 1- VIP route; Phase 2- daily commuters' traffic and Phase 3- tourist paradise.

The main risks that occurred in the construction of this expressway were:

1. Land Acquisition and clearance from authorities: it was difficult to acquire land in thickly populated environment. Removal of tress, shifting of religious structures and shifting of utility from one place to another contributed to delays.

2. Additions to the scope of work: as it was built in two areas Haryana and Delhi, both the governments had separate demands. For example, government asked to add more terminals in the expressway. Out of the 11 structures laid, 9 had significant design modifications being made.

3. Poor forecast of traffic: high density of traffic added to complexity of situation. The Delhi-Gurgaon expressway is one of the busiest roads in the nation. Initially it was designed for about 15,000 to 30,000 passenger car units but the real traffic was 180,000 PCUs. This was so because they relied on the traffic survey of 1998. The toll booths being operated also added to the traffic and long queues were always seen.

4.4.2 Vadodara Halol Toll Road

The VHTR was one of the first road/highway widening projects in India developed under PP framework. It was built under the vision of improving the road qualities in Gujarat and attracting private investors for its development. The construction of the toll road included construction of pavements, drainage systems, toll plaza, bridges and separators.

The main problems that were seen in the project were:

1. Land acquisition: this was the job of the government prior to the bid but the failure to do so result in delay in the construction period.

2. Poor traffic estimates: the traffic on the road is higher than what was expected to be in the reports after the survey. Poor estimation of the population rise and number of automobiles bought in India led to the traffic problem. Also the traffic from outside the state was not measured properly.

3. Debt obligations: because of the poor estimates the financial conditions of VHTRL deteriorated and they were unable to collect the desired refunds in the defined period and were unable to pay the debts.

4. Delays in obtaining permit: the sensitivity of this risk was very high. It was difficult and time consuming to get permits and the primary risk bearer was the private sector.
This project was one of the finest as it kept in mind the environment and social responsibilities. It was the first project to introduce Environmental and Social Safeguards preventive measures to protect the local flora and fauna. This set a benchmark for the other projects. It was operated on the PP framework and Used BOOT mode- Build Own Operate Transfer.

4.4.3 Tuni Anakapalli Annuity Road Project

It is a road expansion project which was taken under by the NHAI. It is one of the several projects under the Golden Quadrilateral programme. It is a 59 kilometre long road which stretches on National Highway 5 from Chennai to Kolkata on PPP basis. It is based on the PP framework and uses BOT- Build Own Transfer Annuity model. The annuity model involves paying the concessionaire a fixed semi-annual sum by NHAI.

Despite of its success it faced many problems.

Delays in Land Acquisition: the risk period for this very cause was small. It went on for 1-2 years and the main risk bearer was NHAI.

Construction Time Overrun Risk: the sensitivity of this risk was high and the primary risk bearer was the concessionaire and thus private sector was the main sufferer. The late completion of work involved penalty.

Construction Risk: there was a need to provide a performance security of Rs. 6.58 crores. The other risks caused delay in the project and thus aggravated the problem.

CHAPTER-5
DATA ANALYSIS AND RESULTS

Table 5.1: Frequency Index

S.no.	Factors	No of responses in each category					FI
		1. Very Low	2. Low	3. Moderate	4. High	5. Very High	
1.	PREQUALIFICATION PHASE						
1.1	Crowding out of reputed Developers.	-	1	9	1	-	0.6
1.2	Forecasting of future traffic (wrongly conducted survey)	-	-	4	3	4	0.8
1.3	Lack of investor's interest in PPP projects.	2	4	3	1	1	0.509
1.4	Proper project identification.	-	1	2	7	1	0.7454
1.5	Environmental clearance from government.	-	2	4	3	2	0.6909
1.6	Unstable government.	2	-	7	2	-	0.5636
2.	TENDERING PHASE						
2.1	Framework of contract (one sided contract).	1	2	1	6	1	0.6727
2.2	High competence for tender.	1	1	4	4	1	0.6545
2.3	Insufficient transfer of commercial risk.	1	-	6	3	1	0.6545
3.	CONSTRUCTION PHASE						
3.1	Land acquisition problems.	-	1	-	2	8	0.909
3.2	Complicated procedure clearances from the authority in concern.	1	1	4	3	2	0.6727
3.3	Arbitration and litigation.	-	2	4	5	-	0.6545
3.4	Inappropriate risk allocation.	-	3	3	5	-	0.6363
3.5	VGF policy, not been fully utilized.	-	2	6	3	-	0.6181
3.6	Financial crises.	1	4	3	2	1	0.5636
4.	CONCESSION PHASE						
4.1	Inflation.	2	3	1	3	2	0.6
4.2	Inappropriate project management.	-	4	4	2	1	0.6
4.3	Complicated procedure in getting long term debt financing.	-	6	4	1	-	0.509

Table 5.2: Severity Index

S.no.	Factors	No of responses in each category					SI
		Very Low	Low	Moderate	High	Very High	
1.	**PREQUALIFICATION PHASE**						
1.1	Crowding out of reputed Developers.	-	1	9	1	-	0.6363
1.2	Forecasting of future traffic (wrongly conducted survey).	-	-	3	4	4	0.8181
1.3	Lack of investor's interest in PPP projects.	-	3	2	3	3	0.709
1.4	Proper project identification.	-	-	3	4	4	0.8181
1.5	Environmental clearance from government.	-	-	1	7	3	0.8363
1.6	Unstable government.	-	-	4	4	3	0.7818
2.	**TENDERING PHASE**						
2.1	Framework of contract (one sided contract).	-	1	1	7	2	0.7818
2.2	High competence for tender.	-	1	-	8	2	0.8
2.3	Insufficient transfer of commercial risk.	-	-	1	9	1	0.8
3.	**CONSTRUCTION PHASE**						
3.1	Land acquisition problems.	-	1	-	2	8	0.909
3.2	Complicated procedure clearances from the authority in concern.	-	-	3	6	2	0.7818
3.3	Arbitration and litigation.	-	-	5	4	2	0.7454
3.4	Inappropriate risk allocation.	-	1	1	8	1	0.7636
3.5	VGF policy, not been fully utilized.	-	1	3	5	2	0.7454
3.6	Financial crises.	-	-	2	5	4	0.8363
4.	**CONCESSION PHASE**						
4.1	Inflation.	-	2	5	1	5	0.6909
4.2	Inappropriate project management.	-	-	4	4	3	0.7818
4.3	Complicated procedure in getting long term debt financing.	-	2	4	4	1	0.6727

Table 5.3 RII Analysis

S.no.	Factors	FI	SI	RII
1.	**PREQUALIFICATION PHASE**			
1.1	Crowding out of reputed Developers.	0.6	0.6363	0.3818
1.2	Forecasting of future traffic (wrongly conducted survey).	0.8	0.8181	0.6545
1.3	Lack of investor's interest in PPP projects.	0.509	0.709	0.3609
1.4	Proper project identification.	0.7454	0.8181	0.6099
1.5	Environmental clearance from government.	0.6909	0.8363	0.5778
1.6	Unstable government.	0.5636	0.7818	0.4406
2.	TENDERING PHASE			
2.1	Framework of contract (one sided contract).	0.6727	0.7818	0.52595
2.2	High competence for tender.	0.6545	0.8	0.5236
2.3	Insufficient transfer of commercial risk.	0.6545	0.8	0.5236
3.	**CONSTRUCTION PHASE**			
3.1	Land acquisition problems.	0.909	0.909	0.8264
3.2	Complicated procedure clearances from the authority in concern.	0.6727	0.7818	0.5259
3.3	Arbitration and litigation.	0.6545	0.7454	0.4879
3.4	Inappropriate risk allocation.	0.6363	0.7636	0.4859
3.5	VGF policy, not been fully utilized.	0.6181	0.7454	0.4608
3.6	Financial crises.	0.5636	0.8363	0.4714
4.	**CONCESSION PHASE**			
4.1	Inflation.	0.6	0.6909	0.4145
4.2	Inappropriate project management.	0.6	0.7818	0.4690
4.3	Complicated procedure in getting long term debt financing.	0.509	0.6727	0.3424

Table 5.4 Ranking According To RII Analysis

S.NO.	FACTORS	RANK
1.	**PREQUALIFICATION PHASE**	
1.1	Crowding out of reputed Developers.	14
1.2	Forecasting of future traffic (wrongly conducted survey).	2
1.3	Lack of investor's interest in PPP projects.	15
1.4	Proper project identification.	3
1.5	Environmental clearance from government.	4
1.6	Unstable government.	12
2.	**TENDERING PHASE**	
2.1	Framework of contract (one sided contract).	5
2.2	High competence for tender.	6
2.3	Insufficient transfer of commercial risk.	6
3.	**CONSTRUCTION PHASE**	
3.1	Land acquisition problems.	1
3.2	Complicated procedure clearances from the authority in concern.	5
3.3	Arbitration and litigation.	7
3.4	Inappropriate risk allocation.	8
3.5	VGF policy, not been fully utilized.	11
3.6	Financial crises.	9
4.	**CONCESSION PHASE**	
4.1	Inflation.	13
4.2	Inappropriate project management.	10
4.3	Complicated procedure in getting long term debt financing.	16

After searching the points responsible for failure of BOT based projects in India, and through applications of tool (RII), it is quite clear that Land Acquisition plays a vital role in failure of BOT based projects. In such projects, government approval is required at each stage creates a barrier in development period, again many of BOT contracts are based on one sided, in which only Government is in winning situation, so investors are not willing to invest in such projects.

After analysing the comparisons and inferences, the main role of assigning and handling the risks in the BOT projects can be subjected to the way the government can show appropriate interference with keeping in mind the demands of the private party. The host government is the BOT projects is although an owner, there are many facts in which government also plays an important role to create a win-win situation. Through creating win-win situation, it will help the government to attract the investor to invest in such projects. From the historical perspective the role of the government in the typical BOT contractual structure can be identified as a regulator and inspector. The active role of the government involves taking a more positive and dynamic role as a facilitator/guarantor, promoter and customer to assist in the success of the project.

BOT projects in highway sector are guarded by multiple risks which result in time overrun and cost overrun on the part of the concessionaire. It is learnt that, there are at time political intervention and also the unstable government, difficult laws in acquisitions of land.

Following are the conclusions drawn through RII analysis:

1. Through the RII analysis, major industry giants think that Land Acquisition is the most critical problem in such kind of projects. Although Land Acquisition Bill and other land bill are there in existence, they are not adopted in effective way as they should have been adopted. It is the main reason in delay of development period. It has a weightage of 0.8264 in RII rank, which is highest.

2. Coming to the contractor's side, future traffic survey conducted by the contractor's plays a very critical role in failure of BOT projects, traffic survey usually are conducted with the help of villagers, local people, which increase the traffic revenue risk because of wrongly conducted survey by people. Huge loss to contractors revenue is mainly because of wrongly conducted traffic survey, therefore it is unable to generate the desired profitable revenue in the concession period and in major cases in India, contractor end-up in huge loss, instead of relying on people, new technologies like sensors and HD camera recordings should be adopted with the help of trained people to generate more realistic results. Many projects failed due to this inappropriate traffic survey.
It has second highest rank in RII analysis.

3. Other critical factors that were analysed through RII analysis are proper project identification, environment clearances through government and framework of one sided contract. Clearances

and approvals required at each stage of the project from concern authority takes a lot of time and due to it, the construction period get delayed, government should work on it and make this procedure easy and time effective. Framework of contract (one sided contract), generally in India this approach is adopted in which Government is always in Winning situation and losses are suffered by contractor, so Government should frame the contract in such a way, such that it is a Win-Win situation for both the parties. Because of one sided contract, there is always inappropriate risk allocation, due to which financial crises are suffered by the contractor, so government should work on the framework of contract. Ex. FIDIC based contract should be adopted.

CHAPTER-6
CONCLUSIONS AND RECOMMENDATIONS

6.1 CONCLUSIONS

The aim of this study is to move the discussions on 'Reasons of failure of BOT projects under PPP phase in India' by providing theoretical approach and analyzing case studies. The tool used is RII analysis.

The conclusions made from the study are as follows:

1. Creation of huge infrastructure deficits- The infrastructure challenges today may seem overwhelming in front of the government. Post-recession the historical boom-and-bust spending cycle has created huge infrastructure deficit as well as funding deficit for the required infrastructure around the world.

2. Need of Private financing- Governments are fighting to stay competitive in today's world. So governments are realizing that they have only option to come out from this, with the help of private party financing in case of large infrastructure projects.

3. Fund Sourcing as a challenge- Getting finance from private party is again a challenge for GOI because of failure of BOT based projects in India, being a developing country, we need to raise the funds for infrastructure projects through private party and for which we have to mitigate the problems which is creating hindrance in participation of private party.

4. Need for increased use of PPP framework- To mitigate the problems of huge investments needed for projects and to minimize the risks involves it is important to use a framework which uses the strengths of both the sectors- private and public and delivers an end product which is capable of fault tolerance and quality project delivery.

5. Identification of major risks involved in BOT projects- BOT projects are prone to risks at any stage of their life cycle. To avoid cost and time overruns it is important to identify them at the correct phase and apply risk mitigation strategies. Through analyzing various case studies and papers based on PPP model BOT projects, 18 major problems in different phases of projects were identified which are listed below:

Table 6.1 Major Risk Factors and Their Ranking According To RII Analysis

S.NO.	FACTORS	RANK
1.	**PREQUALIFICATION PHASE**	
1.1	Crowding out of reputed Developers.	14
1.2	Forecasting of future traffic (wrongly conducted survey).	2
1.3	Lack of investor's interest in PPP projects.	15
1.4	Proper project identification.	3
1.5	Environmental clearance from government.	4
1.6	Unstable government.	12
2.	**TENDERING PHASE**	
2.1	Framework of contract (one sided contract).	5
2.2	High competence for tender.	6
2.3	Insufficient transfer of commercial risk.	6
3.	**CONSTRUCTION PHASE**	
3.1	Land acquisition problems.	1
3.2	Complicated procedure clearances from the authority in concern.	5
3.3	Arbitration and litigation.	7
ss3.4	Inappropriate risk allocation.	8
3.5	VGF policy, not been fully utilized.	11
3.6	Financial crises.	9
4.	**CONCESSION PHASE**	
4.1	Inflation.	13
4.2	Inappropriate project management.	10
4.3	Complicated procedure in getting long term debt financing.	16

After searching the points responsible for failure of BOT based projects in India, and through applications of tool (RII), it is quite clear that Land Acquisition plays a vital role in failure of BOT based projects. In such projects, government approval is required at each stage creates a barrier in development period, again many of BOT contracts are based on one sided, in which only Government is in winning situation, so investors are not willing to invest in such projects.

6. Role of Government- The government plays many important roles in the risk mitigation strategies and also ensures that the private party does not bear all the risks and also ensures that its private counterpart is able to operate the project in the benefits of the public. There are many facts in which government also plays an important role to create a win-win situation. The government is responsible for clearly mentioning the guidelines and rules for the execution of BOT projects. Creating a win-win situation helps the government to attract the investor to invest in such projects. The ongoing role of the government is as a regulator and inspector. In most of the projects it can be seen that the government is the customer or the end user in such projects and also acts as a guarantor and promoter for BOT projects.

BOT projects in highway sector are guarded by multiple risks which result in time overrun and cost overrun on the part of the concessionaire. It is learnt that, there are at time political intervention and also the unstable government, difficult laws in acquisitions of land.

7. Conclusions drawn from RII Analysis- Following are the conclusions drawn through RII analysis:

(a) Through the RII analysis, major industry giants think that Land Acquisition is the most critical problem in such kind of projects. Although Land Acquisition Bill and other land bill are there in existence, they are not adopted in effective way as they should have been adopted. It is the main reason in delay of development period. It has a weightage of 0.8264 in RII rank, which is highest.

(b) Coming to the contractor's side, future traffic survey conducted by the contractor's plays a very critical role in failure of BOT projects, traffic survey usually are conducted with the help of villagers, local people, which increase the traffic revenue risk because of wrongly conducted survey by people. Huge loss to contractors revenue is mainly because of wrongly conducted traffic survey, therefore it is unable to generate the desired profitable revenue in the concession period and in major cases in India, contractor end-up in huge loss, instead of relying on people, new technologies like sensors and HD camera recordings should be adopted with the help of trained people to generate more realistic results. Many projects failed due to this inappropriate traffic survey.
It has second highest rank in RII analysis.

(c) Other critical factors that were analyzed through RII analysis are proper project identification, environment clearances through government and framework of one sided contract. Clearances and approvals required at each stage of the project from concern authority takes a lot of time and due to it, the construction period get delayed, government should work on it and make this procedure easy and time effective. Framework of contract (one sided contract), generally in India this approach is adopted in which Government is always in Winning situation and losses are suffered by contractor, so Government should frame the contract in such a way, such that it is a Win-Win situation for both the parties. Because of one sided contract, there is always inappropriate risk allocation, due to which financial crises are suffered by the contractor, so government should work on the framework of contract. Ex. FIDIC based contract should be adopted.

6.2 RECOMMENDATIONS/ SUGGESTIONS

To avoid the risks that a BOT project bears it is important to use some mitigation strategies to minimize the effect of the risks. The research study concludes some important mitigation strategies which are effective in solving and handling almost any risk. Mitigation strategies are necessary to avoid cost overruns and prevent time delays.

1. Forming a Regulatory Framework and defining Guidelines: The most important measure is the formation of a proper regulatory framework and setting some guidelines. A regulatory framework is a statutory body that deals with the policies and laws. It is important to have such a type of body because it guides some of the following aspects:
1. Defines power boundaries for granting authorities
2. Regulating tax and licenses
3. Giving securities and monitoring the documents
Proper guidelines should be there to regulate the tendering process and to help the private sector understand the lengthy documentation process and the licenses.

2. Risk Management Team- The next mitigation strategy is forming a proper risk management team. A risk management team is a board of members that comprises of different types of people with expertise in their respective fields. The topic of risk management team is gaining popularity nowadays but there is still lack of proper evaluation of the team and constituting it of right members. A right team is formed with the right number of members.

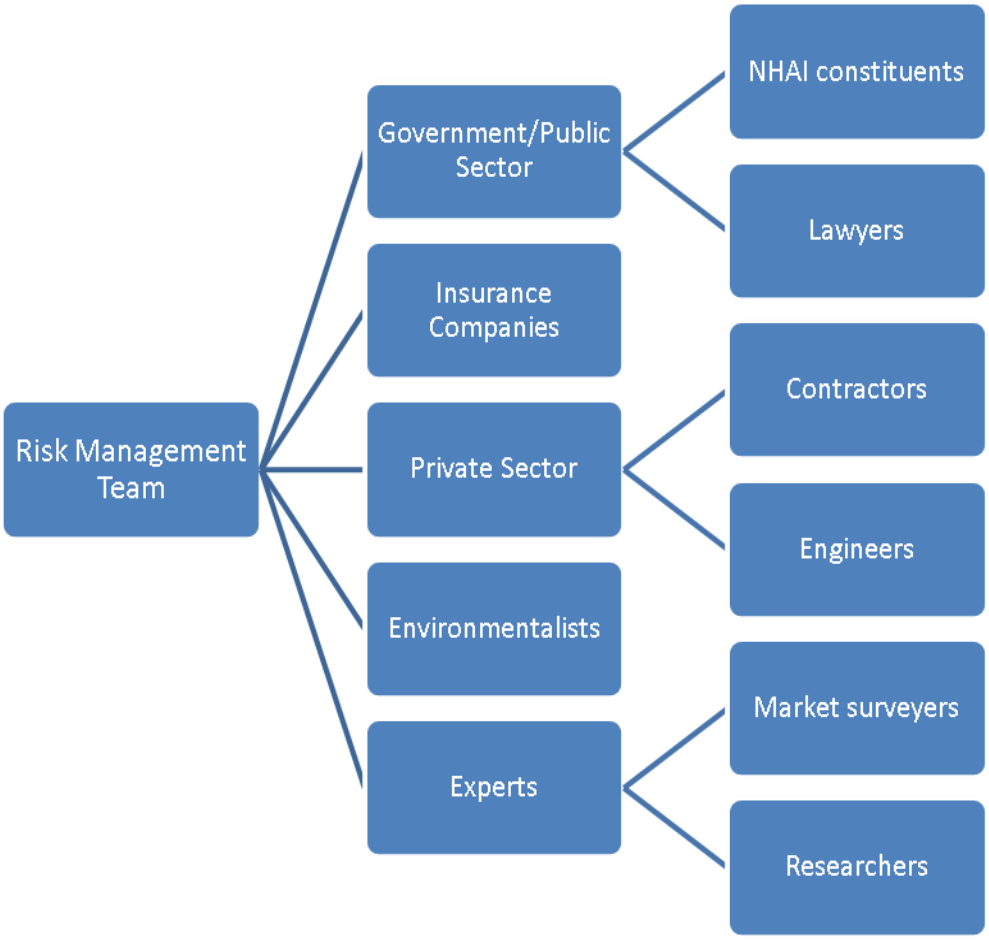

Figure 6.1: Constituent Body of Members of Risk Management Team

3. Introduction of concept of use of Local Currency-Financial risks are very common in the BOT projects and these risks if not identifies early can create a serious problem. These risks can be mitigated by investing in the local currency. This measure is important as it helps to avoid the inflation and effect caused by the change in monetary policies of foreign countries. HDFC bank have introduces a concept of Masala Bonds which uses Indian currency- Rupee for transaction purposes. Using the local currency can avoid many financial risks.

4. Help from Insurance Companies- the insurance companies can help to improve the financial condition and also provide safety from the problems that arise due to change in government and policies. The biggest example of one such insurance company is MIGA (World Bank) which offers safety to the private companies which invest in PPP. India should also open some insurances companies or ask the already running companies to provide with new insurance strategies that safeguards the interests and investments of the private sector and this will attract more and more firms.

5. Regular Phase Evaluation and Local Market Survey- Other preventive measures that can help in making future traffic forecast are regular phase evaluation and local market survey. Both these help to avoid major risks and correct market or area survey can tell about the current traffic conditions and also tell the amount of raw materials, machinery and workforce needed. This also tells the future needed financial aids and provisions can be made to get licenses and get the documentation work done easily. Also there is need of proper traffic management at the tolls. To lessen the long queues at the toll plaza the local people can be exempted from paying the tolls for a specific period of time and proper monitoring system should be installed.

6. Use of Decision Support System- One of the important strategies needed to ensure effective management of risk and avoid the consequences of risks is having an optimum decision support system. For this purpose such software is needed that rank the risks according to their impact and the environmental conditions and at the same time give the probable mitigation strategies. Also it can point out the shortcomings of a contract and check if a particular company's demands are expectation are mentioned in the contract and has proper risk assessment. One can also use the variety of decision support system tools available.

7. Use of Sustainable energy and concept of Environmental Sustainability- The concept of environment sustainability is gaining popularity worldwide. It means to use preventive measures to avoid cutting down of large scale forests areas and decreasing the pollution caused from the machinery of the projects. These machines cause both noise and air pollution. One strategy to lessen this pollution is to use biogas and other such fuels that cause less pollution.

8. Dispute cases to be handles by Swift Courts- Dispute resolution has become a difficult process. People do not readily agree with the private companies which delays the construction period. Also many disputes arise with the local bodies, defense departments and environmental bodies. These dispute resolutions take a lot of time and also overrun the costs. To avoid this situation, swift courts must be set up to make quick decisions and to avoid the long delays in the construction process. These courts can speed up the resolution decisions and also increase the trust between the government and the private sector.

6.3 SUMMARY OF THE SUGGESTIONS/ RECOMMENDATIONS

The following table gives the respective mitigation strategies to the 18 major risk factors identified in this research study.

Table 6.2: Mitigation Strategies to Major Risks Factors

S.no.	Risks	Recommendations
1	Land Acquisition	Regulatory Framework and Guidelines
2	Future traffic forecast	Standard Phase Evaluation
3	Proper project identification	Local Market Survey
4	Environmental clearance from government	Regulatory Framework and Guidelines and Environment sustainability
5	One sided contract	Regulatory Framework and Guidelines
6	High competence for tender	Regulatory Framework and Guidelines
7	Insufficient transfer of commercial risk	Risk Management Team
8	Arbitration and litigation	Swift Courts for Dispute Resolution
9	Inappropriate risk allocation	Risk Management Team
10	Financial crises	Stable currency- Local currency
11	Inappropriate project management	Local Market Survey
12	VGF policy not been fully utilized	Decision Support System
13	Unstable government	Support from insurance companies
14	Inflation	Stable currency- Local currency and Local Market Survey
15	Crowding out of reputed developers	Regulatory Framework and Guidelines
16	Lack of investors' interest in PPP projects	Training and Research & Development
17	Complicated procedure in getting long term debt financing	Regulatory Framework and Guidelines and Risk Management Team
18	Complicated procedure clearances from the authority in concern	Regulatory Framework and Guidelines and Support from Government

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