Public-Private Partnership in Infrastructure Development – An Exploratory Study of Risk

A thesis submitted in partial fulfillment of
the requirements for the degree of

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in
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by

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This is to certify that the
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DEDICATED
TO
MY FRIENDS

(Who helped and guided me in completing this thesis)

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ABSTRACT

Public-private partnership (PPP) involves private investment for the design, construction, operation and even maintenance of a public infrastructure or service project, and generates revenue by charging the users in an agreed specified period of time, or by fixed annual disbursements paid by the public agency. This model of procurement has become one of the commonly adopted procurement strategies in developed and developing countries. Therefore it is considered as the best solution for resource scarcity of infrastructure provision in developing countries like Pakistan. Owing to the complex nature, understanding of risk identification and allocation are key variables for a successful PPP implementation. Therefore, presence of effective, reliable and practical risk management system in any PPP project not only helps in the planned execution of project activities but also makes favorable and conducive atmosphere for private investors to work with confidence. Over the last two decades, Pakistan has experienced mixed taste of success and failure related with PPP construction projects. This exploratory research is an attempt to uncover the critical risks related to PPP road sector projects of Pakistan through qualitative approach based on in-depth interviews targeted to the experts and practicing professionals of PPP from both public and private parties. Financial, political and management risks are the major risks that emerged during the case study of four projects covering road and hydropower sectors. To analyse the impact/severity of these risks based on the real life example of case study projects, content analysis is used which revealed that political and management risks are severely effective in road and hydropower sectors respectively. At the end, some favorable measures are suggested which are crucial for the successful implementation of PPP in Pakistan.

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LIST OF ABBREVATIONS

BOOT	Build-Own-Operate-Transfer
BOT	Build-Operate-Transfer
CSFs	Critical Success Factors
EOBI	Employees Old Age Benefits Institution
FDI	Foreign Direct Investment
GDP	Gross Domestic Product
IA	Implementation Agreement
IPDF	Infrastructure Project Development Facility
JVs	Joint Ventures
MTDF	Medium Term Development Fund
PFI	Private Finance Initiative
PPA	Power Purchase Agreement
PPI	Private Participation in Infrastructure
PPIB	Private Power and Infrastructure Board
PPP	Public-Private Partnership
PSDP	Public Sector Development Program
ROR	Rate of Return
SBP	State Bank of Pakistan
SRO	Statutory Regulation Order
VfM	Value for Money
WUA	Water Use Agreement

Chapter 1

INTRODUCTION

1.1 Brief Description

Public-private partnership (PPP) is a model of procurement in which private party takes the all the risks of financing, construction, operation and maintenance of a public infrastructure. The capital cost and operational expenses with profit is earned by the private investor under the PPP modality by charging users for the facilities offered or through fixed regular disbursements by the public sector over an agreed period of time called the concession period. PPPs benefit each party to concentrate on the risks which managed best to their skills. For the public sector the job is to plan and identify infrastructure needs. In addition to this the government has to focus on development of national, provincial and local sector-specific policies and to enforce the PPP agenda and oversee it. Whereas the private sector deals with effectively delivering the infrastructure and facilities required by the public sector and consumers. PPPs are sought by the federal, provincial, and local governments as a tool to fill the funding gap for infrastructure development. At the same time, PPP project delivery approach due to the involvement of private sector attempts to adopt new technology. As a result quality standards are met that enhance the level of service to the end users. Similarly small local firms do joint ventures (JVs) with the international private firms that also enhance the capabilities of local firms. As a result, presently private sector is also eager to take part in valuable partnership with public sector which would be helpful to enhance its financial and technical capacity.

Hence, PPP is considered a sustainable choice in which competences; proficiencies are combined with additional resources from both public and private sectors to get outcomes which would not be possible independently.

Hence, PPP construction projects become quite complex due to involvement of many stakeholders sharing huge capital over long concession period and private sector's unfamiliar behavior with host country environments. During such situations, reliable and objective risk assessment and allocation becomes very necessary for understanding of their significance at the initial phase of the project. This research study focuses on the opportunities and risks along with their impact associated with PPP infrastructural projects of Pakistan.

1.2 Study Background

The Government of Pakistan (GoP) evaluated that public resources can meet less than 50 percent of the infrastructure investment that it requires. Initially telecommunication and power sectors only experienced PPP procurement but since 2004, popularity of PPP projects in various other sectors has been on the rise from government perspective due to current fiscal constraints, global economic recession, increased urbanization and need of infrastructural facilities by the public. But on the other hand the risks of not obtaining value for money (VfM) and more cost of the projects may hinder project success as compared to traditional delivery approach. Furthermore due to the longer period of contract the risk sharing is to be analyzed. So this research will provide the risks and opportunities through qualitative analysis of completed as well as ongoing PPP infrastructure projects.

Since the early 1990's, PPP procurement model is playing a significant role in the development of infrastructural facilities in Pakistan. Initially only power and telecommunication sectors launched few major social sector projects under PPP in the country and for that the Private Power and Infrastructure Board (PPIB) was created in 1994. In 2003, considering the globalized expanding popularity of PPP model, GoP also enhanced its role to other sectors like transportation, education, agriculture, irrigation, health, sewerage treatment and tourism. In 2005, Pakistan officially recognized the importance of private sector involvement in national infrastructural development through the Medium Term Development Framework (MTDF, 2005-2010) program and sequel to it, Infrastructure Project Development Facility (IPDF) was created in 2007 under Ministry of Finance to look after the affairs of PPP in the country. Pakistan as per World Economic Forum Survey is ranked 67th out of 125 countries in the provision of basic infrastructural facilities to the public and it requires heavy investment in this sector i.e. approximately US$ 180 billion over next 5 years (2015-2020) for the country's sustainable economic growth to compete with the global/regional challenges. Last year, as per Ministry of Finance statistics, country only spent about US$ 11.75 billion through Public Sector Development Program (PSDP) to improve the infrastructural facilities, so there is huge potential in the country for private investors to work with the government in achieving her financial, economic and social dreams through PPP procurement.

Pakistan construction sector, which majorly contributes towards the sustainable national economic growth by creation of indirect jobs, employment and investment opportunities for approximately 45 building material industries across the country, presently requires heavy private investment for its sustained growth. As

per State Bank of Pakistan (SBP) report 2014, construction industry contributed only 2.4% of Gross Domestic Product (GDP) in 2014 as compared to 7% in year 2007 and decline rate of 10.8% was observed which is highest in last 37 years. Planning Commission of Pakistan has estimated $180 billion investment in the development of physical infrastructure across country like construction of buildings, motorways, roads, canals, railways, etc. by 2020, which are not possible through government budgetary resources only therefore government will be looking towards private investors for the accomplishment of desired projects.

Besides above mentioned PPP recognition and opportunities in Pakistan, still there are considerable reservations and resistances from government, judiciary and public for the undertaking of PPP projects in the country. They want to have fair and clean system/approach in the undertaking of PPP projects in the national interest. Therefore presently foreign and domestic private investment is at very low level in the country, which needs to be enhanced through detailed and sincere planning and management.

For the successful execution of any PPP project which involves huge investment by private sector over long duration with multiple interests and to minimize the chances of losses and disputes at later stage, it is very necessary by the stakeholders to plan all modalities of PPP during initial phase through detailed contract documents. This not only ensures the building of confidence level among investors but also exhibits government potential in handling of national interests at grassroots level. One of major factors to attract the investors and financers towards the successful development and execution of PPP project is assessment and allocation of associated risks as their significance dictates the investor and

government to look on the success perspective of any project. Therefore the failure and success of any PPP project largely depends on the critical identification, quantification and assessment of risks in a professional way. PPP construction experience in Pakistan is not so promising, due to presence of geographical and social behavior across the country and lack of PPP experience and knowledge by the government officials and private sector dealing with involvement of heavy capital over long duration with achievement of different interests by various stakeholders.

Therefore there is a terrible demand to understand the value of risk assessment in Pakistan by the government for success of PPP. Pakistan is ethnically and geographically very diverse country, so there is a need to identify and assess the significance of various critical risk factors in a detailed way for the better understanding by the government and investors to effectively manage and mitigate them at right time. The above stated reasons were the core for this study, which have made this research significant for the improvement of PPP atmosphere in Pakistan. This intent can be best achieved by exploring the root causes of success and failure of PPP experience in Pakistan.

1.3 Level of Research Already Carried Out

A wide range of literature on PPP topic has been published over last two decades. PPPs were considered as alternative procurement model to manage the funding issues faced by the government agencies to satisfy public needs. This might be the reason that this model of procurement was employed extensively and gained significant acknowledgement around the globe. The UK is a pioneer of PFI/PPP model for getting full advantage to develop both economic and social infrastructure

facilities (Abdel-Aziz 2007). It is very much important to reveal that more than 80 per cent of the projects procured by this model were completed on time and within budget as compared to the traditionally procured public sector projects. Harris (2004) found that the enormous international attention in PPPs can be traced back to the experience of the UK. He also mentioned that some countries which claimed to have PPPs were in fact using PPPs partially for the delivery of certain utilities, not as a designed model. Numerous authors have commenced efficient analyses of pertinent PPP research to determine the exposure and emphases of PPP related researches and the contributions of these studies. The supreme collective conclusion of these studies is that PPPs are undergoing a remarkable revolution (Yuan, Zeng *et al.* 2009). Tang, Shen *et al.* (2010) recommended that innovative approaches must be applied in PPP related studies to resolve the emergent issues of project performance. Furthermore, Yuan, Zeng *et al.* (2009) suggested more precise direction of PPP projects and success of projected objectives through micromanagement and stage-specific analyses. Farooq (2012) mentioned that effective and reliable risk assessment and allocation mechanism among various stakeholders is very necessary for the implementation of PPP projects in Pakistan where this model is already in its infancy compared to India and China in the region. Another study elaborated that access to site and political risk should be borne by public sector, whereas risks concerning relationships between stakeholders and force majeure should be shared mutually. The rest of the risks, mainly project risks, should be allocated to the private partner (Bing et al., 2005a). Noor, Khalfan *et al.* (2012) uncovered the limitations in project approval process consequently creating troubles in implementation.

1.4 Research Significance

For sustainable economic and social development and considering the fiscal impediments being faced by the government in provision of growing infrastructural needs, no one can deny the role of PPP in future and similarly properly structured and legally covered program will be required by the governments to build the confidence level of foreign investors in the region. PPP procurement is quite different than others due to involvement of multiple stakeholders investing huge capital over long duration with different interests in mind for the success of project. Mubin and Ghaffar (2008) found that over last two decades Pakistan has experienced mixed taste of success and failure related with PPP construction projects. Therefore there is a need to understand the main factors which contribute towards the success of PPP projects in ethnically and geographically diverse Pakistan. One of the major factors which build the confidence of investor is presence of reliable, practical and objective risk management strategy by the host government along with fair and justified risk allocation mechanism. This study also aims at identifying critical, practical and on ground risk factors associated with PPP projects across Pakistan and also finding of risk allocation perceptions among public and private sectors. This will help government and private sectors to understand major risks in a more comprehensive way before undertaking PPP project in various parts of Pakistan and similarly it will make future researchers to focus their attention on more specific risks for dealing with them in a comprehensive and detailed way.

1.5 Research Objectives

The objectives of this research are given as follow:

i. To explore the major risks and opportunities related to PPP infrastructure projects of Pakistan.

ii. To investigate the impacts/severity of the risks in specific sectors from the perspective of major stakeholders.

iii. To recommend a framework to improve PPP project model in Pakistan that can facilitate the adoption and successful implementation of PPPs.

1.6 Relevance to National Needs:

There are several opportunities for the development of PPPs in Pakistan in terms of infrastructural development and service provision. Since 1990 public sector financing in infrastructure has declined to a great extent as a fall in GDP resulting in a discontinuity for the infrastructure development. Currently, the government can only provide about less than 50% of the basic infrastructure demands through public funds. Therefore, there is an urgent requirement to attract private funds and improve productivity of these investments so that the public can enjoy the intended welfares. It is also fact that local and international interest in PPPs is encouraged government commitment to decentralization and market solutions to infrastructure. The government is more eager and facilitative for PPP as it understands that there is a crucial need to attract public sector capitals to deliver infrastructure.

Furthermore in Pakistan most of the public sector projects face the cost and time delays but due to the adoption of PPP delivery approach this ratio can be reduce as project procured through PPP have high probability to stick to the budget and time estimate than projects procured traditionally (Grimsey and Lewis 2004). In

addition to this the biggest benefit to the country like Pakistan, where the shortage of funds and political instability persist, the risk of cost and time delays sharing by private sector would relive to a great extent to the public itself. The research will provide the guidelines for the successful performance of PPPs to overcome the risks associated with financial and technical matters, the opportunities to provide public infrastructure on faster pace. This research will also identify the weaknesses of PPPs that usually results in failure and disputes.

1.7 Summary

This chapter covered the basic introduction of PPP in Pakistan and highlighted the importance of investigation of various opportunities and risk factors which may affect the successful implementation of PPP construction projects in Pakistan. The chapter also informed about the significance and objectives of the research study which will be conducted by keeping certain specific goals in mind.

Chapter 2

LITERATURE REVIEW

2.1 Nature of Public Infrastructure

Facilities which are indispensible for the proper functioning of the economy and society of a country are commonly known as public infrastructure. These are considered as significant to support economic and social activity, congruent with 'economic' and 'social' infrastructure, that also includes the secondary functions, such as public-sector offices and accommodations (Yescombe 2011). Public infrastructure has both 'hard' and 'soft' facets, as shown in Table 2.1 (Argy, Lindfield *et al.* 1999).

- 'Economic' infrastructure involves internal facilities that are considered essential for the routine business and industrial activities of a country. These facilities include communication (roads, railways, telecommunication, etc.), distribution networks (for electricity, water, sewage, etc.), ports and financial institutions.
- 'Social' infrastructure involves the facilities that accommodate the basic services to improve the quality of life and welfare in the community. It includes hospitals, education, recreation, treatment facilities, water and sewerage pipes, prisons etc.

Jefferies and McGeorge (2009) stated that the breadth of social infrastructure projects is lesser than the economic infrastructure projects (ports, power, bridges, roads, etc.) due to the diversity in nature and complexity in trend especially in terms of continuous association with the public. Adam (1996) specified that investment in infrastructure has numerous characteristics which include a very long duration for development, extended maturity period, large scale and capital demand. According to Fair and Raymond (1994) infrastructure project is a complex and challenging task for valuation owing to the taxation policies, pricing rules, uncertainty in inflation prediction and guarantees. So it needs through input from key stakeholders and detailed analysis of risk factors.

Table 2. 1 Classification of infrastructure by type

	Hard	**Soft**
Economic	Ports Motorways Airports Bridges Telecommunication Power	Technology transfer Vocational training R & D facilities Financial institutions Export assistance
Social	Hospitals Water supply Prisons Housing Sewerage Child care Schools Aged care homes	Social security Community services Environmental agencies

2.2 PPP Definition

PPP also known as Private Finance Initiative (PFI), is simply a sort of arrangement which involves private investment for the design, construction, operation and even maintenance of a public infrastructure or service projects and

generates a revenue by charging the users in an agreed specified period of time, or by fixed annual disbursements paid by the public agency (Grimsey and Lewis 2004). This specified time called concession period is set for the private party to recover its invested capital and operational cost incurred with enough profit on the investment. Meanwhile, the public sector has a chance to focus and spend its assets for the provision of emergent economic and social requirements of community (IPDF 2010). Rosenau (2000) identified that PPP is beneficial for all as it is a combination of public and private sector qualities, which have better results in providing services for the community.

Alfen, Kalidindi *et al.* (2009) stated that infrastructure development via private involvement through PPP has become one of the commonly implemented procurement approaches in developed and developing countries. The tradition of private sector participation in developing, funding and maintaining the infrastructure facilities and services is considered more than traditional types of contracts among the private sector organizations, in which a full control is given to the private sector for a long time (concession period) and is made responsible for its intended operation and maintenance before it is given back to the public sector after the concession period. A proper concession period is established after a thorough socio-economic study so that the private sector could recover its investment along with the appropriate rate of return.

There are two opinions regarding PPPs among the scholars and researchers, some view that PPP is a *"governance tool"* while others think it is mere a

"language game" (Teisman and Klijn 2000). Formers say that this tool will replace the existing traditional system of procurement and have a better system of sharing risk between private and public sectors, while the later argues that PPP is a change of words for the establishment of procedure to involve the private sector in public services (Linder 1999).

2.3 Principal Areas of PPP Research

According to Zhang (2004) there is a significant need of reviewing the worldwide experience and performance of emerging international PPP practices to draw the lessons which can develop a comprehensive PPP knowledge and consolidating the experience. This knowledge and experience will be helpful for the creation of applicable laws, regulations, and guidelines and in the development of efficient procurement model for best PPP practices. Akintoye, Hardcastle *et al.* (2003) stated that the significant characteristics of PPPs, in contradiction to other types of private participation in infrastructure involve risk transfer and long term partnership agreements.

An appraisal of the available studies discloses that there are six basic areas where research has been focused.

2.3.1 Risk management

Several researchers have investigated risks related to PPP projects and has produced useful understandings about identification, assessment and allocation of risks. According to Grimsey and Lewis (2002) PFI/PPP is a best option to transfer

risk from public sector to private entity and ensure VfM. Thomas, Kalidindi *et al.* (2003) found eight factors that can influence the risk taking approach of different stakeholders. Bing, Akintoye *et al.* (2005) and Nisar (2007) suggested that in order to achieve VfM and to get the benefit from public project and service delivery development, the public and private sector partners need to reach a mutually acceptable risk allocation scheme before the contract is awarded. Xenidis and Angelides (2005) provided guidelines to facilitate the managers for the appropriate risk analysis conducted before the bidding of PPP project. Sachs, Tiong *et al.* (2007) proposed the holistic and rational understanding for both public and private sectors as a supporting tool to decide and manage the risk allocation strategy in PPP projects. Jin (2009) ranked and categorized the different Asian countries according to the political risk factors which support the decision makers in prioritizing and analyzing the country risks. Based on the research findings Xu, Chan *et al.* (2010) established a fuzzy synthetic assessment framework to establish an fair risk allocation between the public and private sectors. Chan, Yeung *et al.* (2010) scientifically found that risks related to PPPs can be categorized as the following: market risks, planning risks, project risks, political risks and regulatory risks.

2.3.2 Critical success factors (CSFs)

CSFs can be defined as *"those particular crucial aspects of project in which promising outcomes are extremely indispensable for a manager to reach his or her targets"* (Rockart 1982). Based on the public/private win-win principle, Zhang (2005) identified five major CSFs based on win-win principle of both public and private sectors.

The five main CSFs are:

- Encouraging investment atmosphere
- Financial feasibility
- Reliable concessionaire consortium
- Sound financial package
- Suitable risk sharing via reliable contractual model.

Similarly, Zhang (2005) investigated the comparative importance of these CSFs and the aim was to identify and categorize the useful aspects that results in a effective implementation of the PPP projects or the choice of a suitable concessionaire that will assure the project success. These factors will also help to design appropriate tender evaluation mechanism. Research and discussions about CSFs were also a subject of different studies (Tiong, Yeo *et al.* 1992; Morledge and Owen 1999).

2.3.3 Roles and responsibilities of public sector

Public sector role is crucial for the implementation and facilitation of PPP projects for the development of infrastructure (Tam and Leung 1999). One of the key factors found contributing in the unsuccessful implementation of PPP projects is the lack of support from public sector organizations. A chain of responsibilities that the government should accept to safeguard the successful implementations of a PPP has been classified and comprised: (1) making encouraging investment atmosphere; (2) creating comprehensive regulatory model and supportive administration; (3)

choosing a most suitable concessionaire; and (4) constant involvement during complete project life cycle (Koch and Buser 2006; Abdel-Aziz 2007).

2.3.4 Concessionaire selection

"A concessionaire is a consortium established specifically to undertake a PPP project" (Kwak, Chih *et al.* 2009). It is the primary stakeholder usually chief responsible for most of the project phases. Zhang (2004) found that the selection of a most appropriate concessionaire can considerably disturb the implementation of a PPP project. Ahadzi and Bowles (2004) also commenced an attempt to suggest guidelines for the selection of the most appropriate concessionaire

2.3.5 PPP finance

A very well-planned financing is a key to success of any PPP project. But PPP project financing is portrayed as a challenging and complicated mission. The major reason behind this is the consideration of a number of internal and external risk factors before investing in any PPP endeavor. Several studies (Levy 1996; Ye and Tiong 2000; Schaufelberger and Wipadapisut 2003; Zhang 2005; Devapriya 2006) have focused on the area of PPP finance and suggested the financial strategies and financial models to counter the risks involved with this.

2.3.6 PPP cost, time and contract characteristics

It is evident from numerous studies that cost and time savings are inherent pros of any PPP model. In the literature, the performance of PPPs related to cost and time is directly connected to CSFs of the project (Raisbeck, Duffield *et al.* 2010).

Moreover, the features of PPP models are extensively pertinent to the cost and time of the projects. Acknowledging this viewpoint, many researchers (Herbsman and Glagola 1998; Zietlow 2005; Anastasopoulos, Labi *et al.* 2009) have investigated issues with cost and time with respect to the characteristics of certain contracting approaches.

2.4 Evolution of PPP

The origin of the term public private partnership lies in US where this model was initiated for the education development programs under the title of joint public and private sector funding. Later on in 1950s similar modality was initiated for the supplies of utilities. But the wider use of this arrangement is made for urban renewal programs in 1960s under the referral of public-private JVs (Yescombe 2011).

Bing and Tiong (1999) found that PPP or PFIs initially began in UK during the era of late 1980s and early 1990s with the purpose of saving the government cost and bringing the private investment into public infrastructure facilities. Main aim of introducing PFIs was widening the privatization and developing of guidelines to include the establishment of infrastructure and public services by a hybrid model of joint public and private sector financing (Hayford and Partner 2006). Since that time, PFIs are sought as UK government's favorite approach for public infrastructure development. PFI investment in UK has reached to US$ 83 billion in 712 projects over last two decades (Treasury and UK 2010). Kwak, Chih *et al.* (2009) stated that from 1992 to 2004 UK has appeared most extensive beneficiary of PPP/PFI.

2.5 Worldwide PPP Experience

Over last decade, there has been tremendous rise of PPP projects across the world, almost all governments seem to be striving to accomplish economic development and sustainability through advancing their basic infrastructure.

Worldwide investment in PPPs from 1990-2012 has reached to US$ 2,026 billion in provision of infrastructural projects and major investment in telecommunication sector has been recorded over last two decades as shown in Figure 2.1 (World Bank, 2012). Energy is the second highest sector in the world which attracted US$ 715 billion investment (35%) through PPP. Transport sector is at number three in the world in attracting investment of US$ 367 Billion.

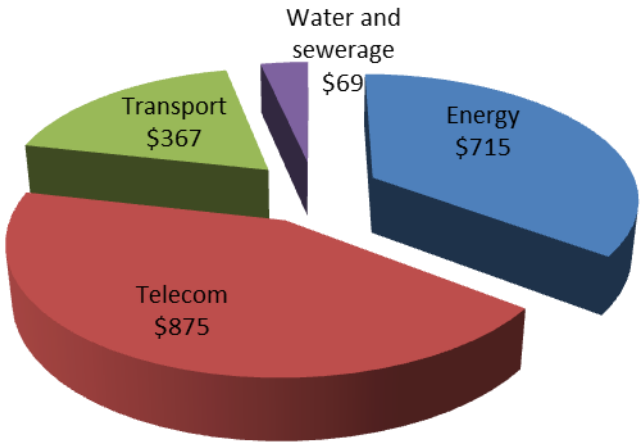

Figure 2. 1 Global Investment in PPP Projects (US$ Billion), 1990- 2012

Source: World Bank and PPIAF, PPI Project Database. (http://ppi.worldbank.org)

2.5.1 PPP in Europe

After success of PFIs in UK, PPP is rapidly gaining momentum in Europe and in 2005-06 the size of PPP market has grown by 37% (Grimsey and Lewis 2004). Construction Industry seems to be major beneficiary of this concept as around 70% of the projects belong to this sector. According to the fourth annual report, the volume of bids for the PPP projects has increased by two times since May 2004 and is around €54 billion (Sheskin 2003). Table 2.2 shows European countries with leading implementation of PPP projects from 2001-08. UK is leading the Europe for the implementation of PPP projects, where 536 PPP projects have been completed since.

Table 2. 2 Public-Private Partnership Projects in Europe (*IFSL, 2009)*

S/No.	Country	Capital value of projects (€ million)	No. of signed deals
a.	UK	55131	536
b.	Spain	4127	38
c.	France	4093	34
d.	Italy	3563	20
e.	Republic of Ireland	3253	19
f.	Greece	2398	8
g.	Germany	2029	40
h.	Belgium	1780	6
i.	Netherlands	1733	9
j.	Poland	1520	2
k.	Austria	899	6
l.	Finland	700	1
m.	Bulgaria	654	6
n.	Hungary	556	11
o.	Cyprus	500	1
p.	Portugal	450	7
q.	Other countries	977	7

Among the sectors of PPP investment road is on top, as a result in Europe especially in southern European countries this concession model has flourishing stories. Recently, along with the road sector, tunnel and bridge infrastructure projects also gaining an enormous demand. Rail also significant by having tender value of 15% of the market mostly comprises of light rail projects. The political risk has made these projects very difficult to deliver scale in major part of Europe (Grimsey and Lewis 2004).

Table 2. 3 Sector Wise PPP Projects in Europe (IFSL, 2009)

Sector	%age
Bridges/Tunnels/Roads	60
Rail / light rail	22
Defense	4
Health care	4
Sports / tourism	3
Airports	2
Education	2
Waste/ water	2
Prisons	1
Maritime /ports	1
Regeneration	1

2.5.2 PPP Projects in China

Development of PPP in China can be divided into three stages. From the mid-1980s to mid-1990s, the first successful PPP project "Shenzhen Shajiao B Power Project" was completed with the partnership of Hong Kong Company. After the implementation of tax sharing reforms in China in 1994 between central and local governments, PPP witnessed second wave of success and this time the major contribution was shared by local governments who were subjected to fiscal constraints due to 1994 tax reforms for the provision of infrastructural facilities to public. Second wave of PPP projects was witnessed during mid-1990s to 2000,

where huge financial PPP projects were successfully completed mainly in power and water sectors.

In 2001 and 2004, central government of China revised PPP reforms, legislations and policies for successful implementation by eliminating corruption, illegality and disputes from PPP procurement model to a large extent. This supported and encouraged private investors to undertake PPP projects in China with a reduced risk of financial loss. Such favorable open door policies and reforms generated another boom of PPP in China and during this time huge Foreign Direct Investment (FDI) was noticed in hundreds of PPP projects covering almost all sectors of economy. Figure 2.2 shows the financial induction arising from foreign direct investment in China from 1990 to 2012. It provides a good indirect measure of PFIs during these years.

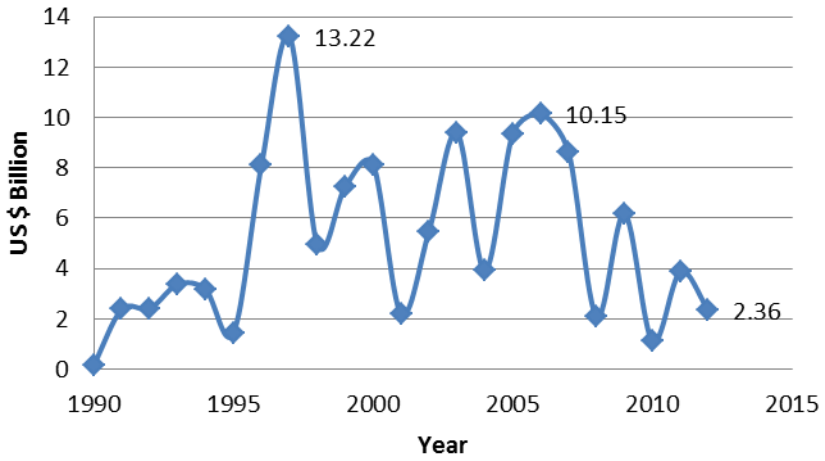

Figure 2. 2 PPI Year wise investment summary in China

Source: World Bank and PPIAF, PPI Project Database. (http://ppi.*worldbank.org*)

2.5.3 PPP in India

The Department of Economic Affairs (DEA), Ministry of Finance, Government of India is responsible for promoting PPP in India. Over last decade, PPP projects in India have gained significant momentum for delivering strong economic growth across most sectors of infrastructural development. Annual utilized FDI in India grew from US$ 636 million in 1991 to US$ 26 billion in 2009, making India in recent years the third largest destination of FDI in the world (Shen, Platten *et al.* 2006). Sector-wise, the road projects account for about 60% of the total projects in numbers, and 45% in terms of value (NHAI, 2011), ports come in the second place and account for 10% of the total projects (30% of the total value).

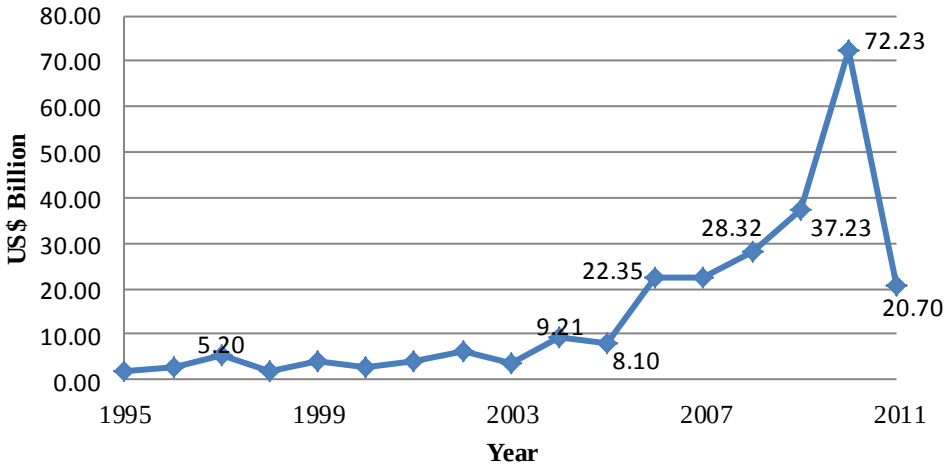

Figure 2. 3 Indian Investment in PPP Projects, 1995- 2011 (World Bank, 2012)

Source: World Bank and PPIAF, PPI Project Database. (http://ppi.*worldbank.org*)

As in recent periods, private investment continued to concentrate in India and, with considerable decrease in 2011 due to global economic recession, investment in PPP projects is gaining momentum since 2012 as shown in Figure 2.3.

This investment reached at its peak during year 2010, where considerable amount of US$ 72.23 Billion was spent on the uplift of infrastructural needs through PPP mode.

Overall in PPP investment, India has attracted 70% of its portion in transport sector only where road construction got 65% of private investment. During 2009-2011 period, India completed 23 major road construction projects involving investment of US$8.7 billion. Railroads attracted the second highest investment with US$6.1 billion in three large metro transit projects. Five port projects reached financial closure with investments of US$1.4 billion, and three airport projects attracted investments of US$360 million (World Bank, 2012).

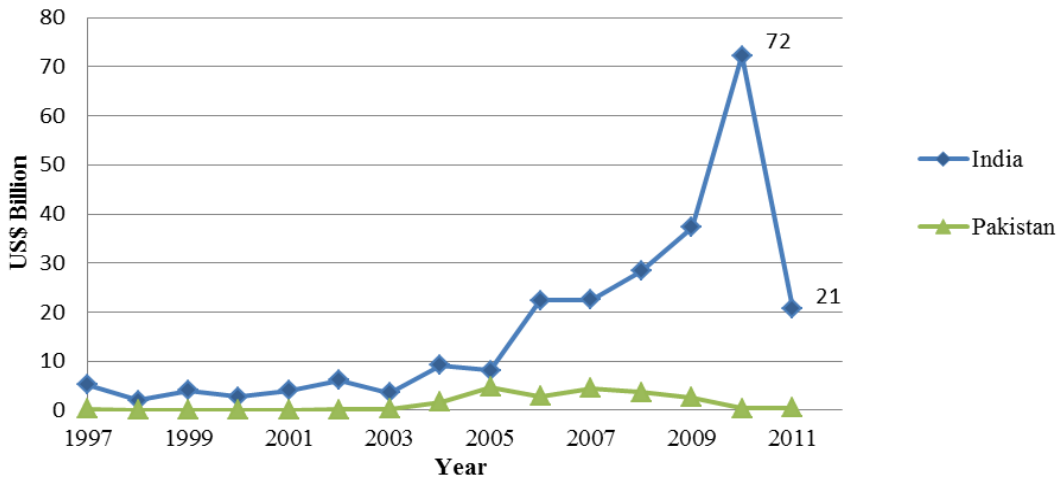

Figure 2. 4 South Asian Comparison of investment in PPP projects

Source: World Bank and PPIAF, PPI Project Database. (http://ppi.worldbank.org)

As shown in Figure 2.4, according to World Bank Report (2012), presently India is leading the region in the development of its infrastructural needs through PPP.

Government of India, Ministry of Finance statistics forecasted a gradual growth from 4.7% of GDP in 2005/06 to 8% by 2011/12. This meant an investment of US$ 384 billion (2005/06 prices), assuming that the real GDP grows at 9% per annum and annual inflation would remain at 5%. As per World Bank (2012), India has significantly increased its PPP implementation program for the development of country infrastructural facilities since 2006 and reached on its peak in 2010 by completing 95 PPP projects in one year as shown in Figure 2.5.

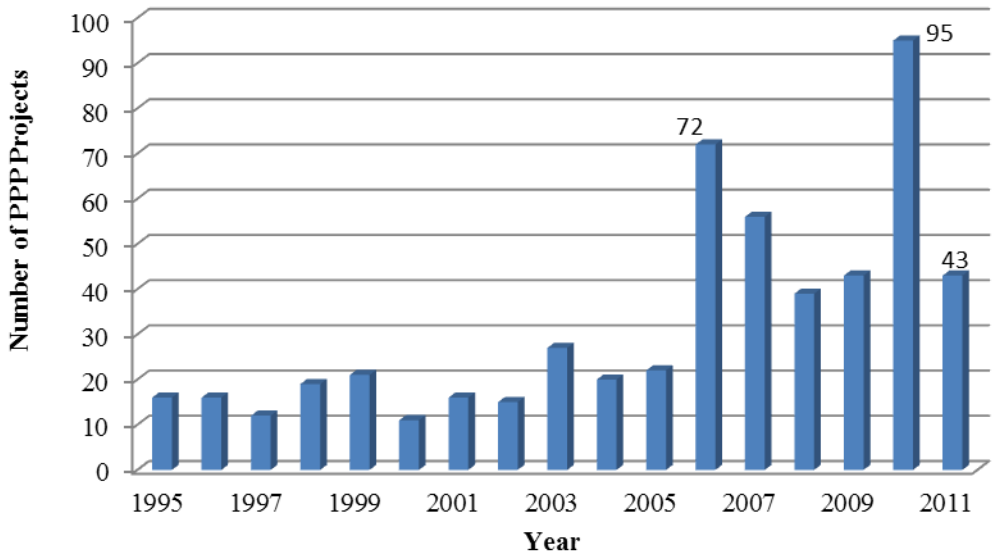

Figure 2. 5 Number of PPP Projects in India, 1995- 2011

Source: World Bank and PPIAF, PPI Project Database. (http://ppi.worldbank.org)

As per PPP India Data Base, Department of Economic Affairs, Ministry of Finance, there are total of 1263 PPP projects in India till January 2011, out of which 212 PPP projects are being controlled by central government and 1051 PPP projects

are looked after by state governments. Some of famous PPP projects completed during recent years in India are highlighted in the Table 2.4

Table 2. 4 Major PPP Projects in India, 2012

S/No	Project	State	Cost (US$ Million)	Type
1.	Modernization of Delhi International Airport	Delhi	1792/-	LDOT
2.	Prayagraj Power Project at Bara, Allahabad	Uttar Pradesh	2085/-	BOOT
3.	Sangam Power Project at Karchana, Allahabad	Uttar Pradesh	1375/-	BOOT
4.	Teesta -III hydro power project	Sikkim	1229/-	BOOT
5.	Vodarevu Nizampatnam Ports and Port based Corridor Development	Andhra Pradesh	3500/-	BOT
6.	Puducherry port	Puducherry	615/-	BOT
7.	Mumbai Trans Harbour Link Road	Maharashtra	833/-	BOT
8.	Hyderabad-Vijaywada Road Section	Andhra Pradesh	362/-	BOT
9.	Surat Dahisar Road Project	Gujarat - Maharashtra	520/-	BOT
10.	Panipat Jalandha Road Project	Haryana - Punjab	446/-	BOT

(Source: PPP India data base, Department of Economic Affairs, Ministry of Finance, Government of India)

2.5.4 PPP in Pakistan

In Pakistan, there are enormous infrastructure needs against limited resources which are insufficient to meet even the basic infrastructure demands for the public. There exists not only limited fiscal space but there are also huge gaps in public sector potential and capability to construct and manage infrastructure (Noor, Khalfan *et al.* 2012). Pakistan requires approximately US$ 110 billion for the development of its infrastructural needs to ensure sustainable economic growth as per Medium Term

Development Framework "MTDF" (2005- 2010), whereas country only spent US$ 18.5 billion on the infrastructure development through PPP during said period (IPDF, 2009). Figure 2.8 shows the investment of Pakistan in the PPP projects since 1990, which is not so healthy compared to China or India in our region and major investment belonged to energy sector during 2005 and 2008 period, which is also criticized in the country for mismanagement in the contract awarding, procurement and implementation.

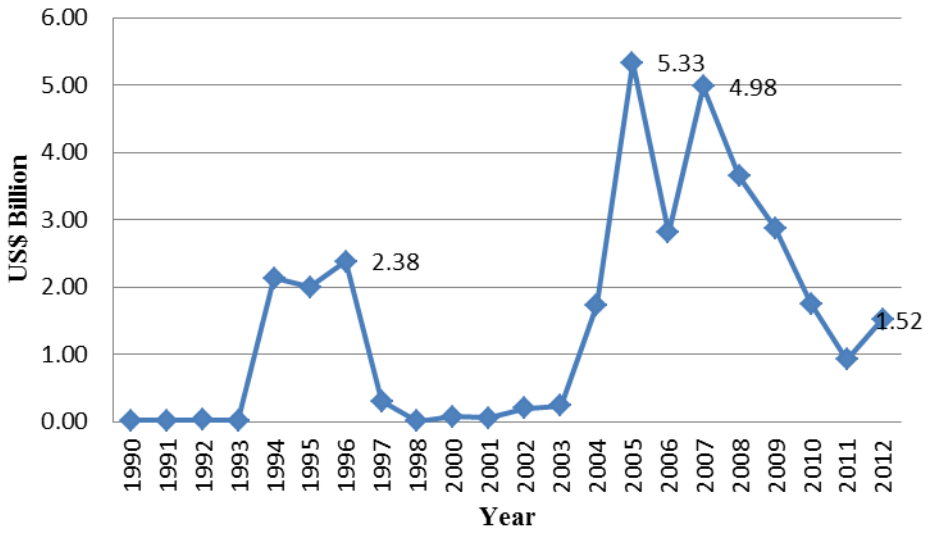

Figure 2. 6 Pakistan Investment in PPP Projects

Source: World Bank and PPIAF, PPI Project Database. (http://ppi.worldbank.org)

Noor, Khalfan *et al.* (2012) summarized that the restraining forces are stronger than the driving forces in the case of non-traditional (PPP) method in Pakistan. Figure 2.7 shows that restraining forces in the implementation of PPP in Pakistan are dominant and need to be confronted. It is also concluded that the GoP recognizes that satisfactory infrastructure desires cannot be achieved through scarce

public funding, but the challenging task is to attract and retain private investment through investor confidence. The other prerequisites are to get the basic knowledge of the principals of PPP finance, develop a comprehensive policy framework and consistency in policies and efficient management of project procurement process.

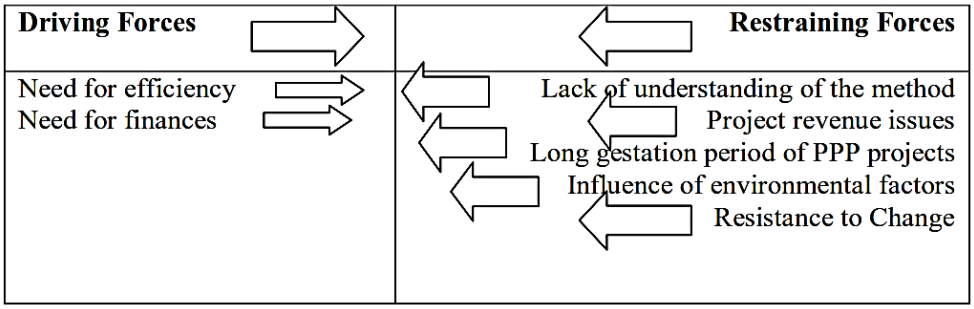

Figure 2. 7 Force Field Analysis of Non-Traditional Method in Pakistan (*Source (Noor, Khalfan et al. 2012)*)

Mubin and Ghaffar (2008) found that apart from benefits, there are complexities with Build Operate and Transfer (BOT) contracts due to long term contractual obligations and multi-party involvement. To counter this situation, a comprehensive legal, economical and technical framework needs to be developed on large scale for successful execution of BOT projects. Mubin and Ghaffar (2008) also concluded that, the success of PPP in Pakistan largely depends upon the political stability, long term Govt. policies and Govt. structure. The political and finance are most vital constraints faced by stakeholders during planning as well as in construction phase of BOT projects in Pakistan (Khan, Sharif *et al.* 2012). Khan, Jamil *et al.* (2008) investigated that Pakistan is among those countries, which has never been able to exploit the benefits and earn the advantages from the BOT projects.

GoP believes that less than half of the infrastructure investment needs can be met with public funds under the MTDF of the GoP (IPDF, 2009). Country requires private sector investment in infrastructural development at 5% of GDP per annum (US $ 15 billion) to meet the national GDP growth of 7 - 8%. Therefore to meet with the future massive infrastructural development challenges, GoP has to depend upon PPP procurement like other countries in the region through proper planning and management as shown in figure to uplift her weak economic growth trends.

Development of PPP procurement in Pakistan can be broadly divided into two phases i.e. 1st phase from early 1990s to 2000 and 2nd phase from 2001 to present year. During early 1990s, after considering the role of private sector investment in national infrastructural development projects, Pakistan initially established a policy and regulatory framework for PPP in the telecom and power sectors only in 1993 and created *"The Private Power and Infrastructure Board (PPIB)"* in 1994 as "One Window Facilitator" to promote private sector participation in the power sector of Pakistan (PPIB, 2011). During the 1st phase, the major PPP projects were completion of 14 power projects of 3000 MW capacity by PPIB and construction of Pakistan's first motorway, the 367 km 6-lane connecting the cities of Islamabad and Lahore, constructed by South Korea's Daewoo Corporation, inaugurated in November 1997.

In 2000, Government took major initiatives in structuring proper framework for undertaking successful PPP projects in other sectors such as transport and logistics, water supply, sanitation, solid waste management, social sectors, and real

estate. The Privatization Act 2000; the creation of a Ministry of Privatization and Investment; the setting up of the Board of Investment; the Insurance Act 2001 are some of examples for the enhancement of PPP during that time (Farooq 2012).

In 2007, the GoP established the IPDF under the umbrella of the Ministry of Finance to provide expertise and hands-on support to Public Institutions (Line Ministries, Provincial Governments, Local Bodies, and State Owned Enterprises) on PPP. IPDF's spectrum of projects ranges from transport and logistics, urban mass transit, municipal services, Social Infrastructure as well as small to medium scale energy projects. On January 2010, IPDF got approved "*Pakistan Policy on PPP*" from Economic Coordination Committee (ECC) of the Cabinet (IPDF, 2010).

Pakistan till June 2012 has successfully handled 81 PPP projects in various sectors as shown in Figure 2.8 and has also experienced considerable boom of PPP constructional projects during period of 2006 – 2009, where construction of Gawadar Port, Sialkot International Airport, Lahore-Sheikhupura-Faisalabad Dual Carriageway, Lakpass Tunnel Project near Quetta and 84 MW New Bong Hydropower Project are some of successful stories of PPP in the country.

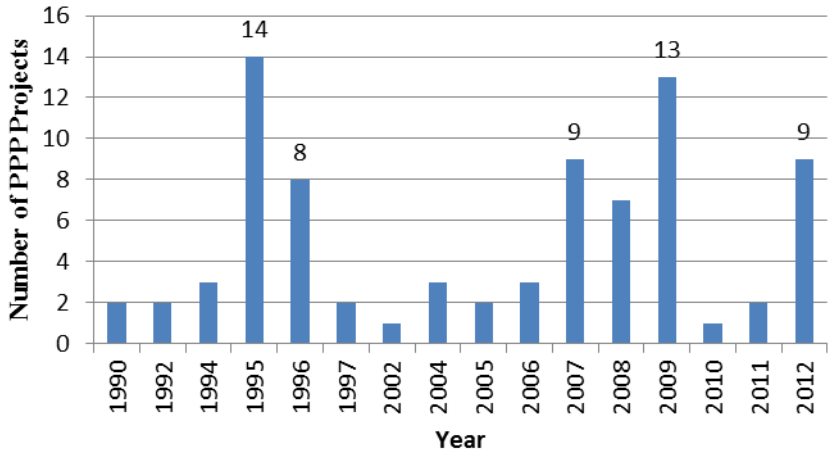

Figure 2. 8 Pakistan PPP projects

Source: World Bank and PPIAF, PPI Project Database. (http://ppi.worldbank.org)

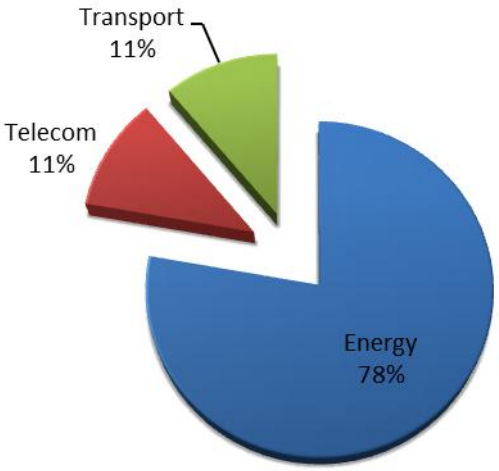

Figure 2. 9 Sector Wise Distribution of Pakistan PPP Projects

Source: World Bank and PPIAF, PPI Project Database. (http://ppi.worldbank.org)

Out of 81 PPP projects which the government has undertaken so far, 64 PPP projects belonged to energy sector alone making 78% of total projects. No project has yet initiated in water and sewerage sector in the country as shown in Figure 2.9.

2.5.4.1 Development of PPP under IPDF

, the GoP organized and structured a PPP program in 2007 that included the followings ((IPDF 2010) cited in (Noor 2011))

I. "Launch of a PPP Task Force that is chaired by the Advisor to the Prime Minister on Finance and comprises of all major stakeholders. The rationale for the establishment of the Task Force is to formulate a policy, regulatory and legislative structure that is encouraging to create a PPP market in Pakistan;

II. Establishment of the Infrastructure Project Development Facility that serves as the Secretariat to the Task Force, provides 'hands-on' technical assistance to implementing agencies at all tiers of government, builds their implementation capacity, and provides inputs financing, guarantees, subsidies etc.

III. Formulating a business plan to establish the Infrastructure Project Financing Facility (IPFF) to provide 'residual' long term fixed rate local currency financing.

IPDF is acting as a facilitator on behalf of local, provincial and federal governments for the PPP. IPDF's mandate is to help public sector agencies, at all tiers of the Government, to improve infrastructure development proposals and prepare for tendering to the private sector, without becoming a contract signatory to the transactions (IPDF 2011). Till to date IPDF has handled various PPP projects worth of US$ 2.1 Billion, largest belonged to transport and logistics. After passing

of Eighteenth Amendment of the Constitution of Pakistan on 8th April 2010, now provinces have become autonomous in dealing with PPP subject and sequel to it the Provincial Government in Punjab has taken several very impressive steps to increase private sector participation like forming up independent PPP cell in Planning Department and formulation of comprehensive PPP policy. The Sindh Government has also taken considerable steps for the promotion of PPP in their area. Presently both provinces are handling number of PPP projects like solid waste management, bus rapid transit system in Lahore city by Punjab Government and construction of Hyderabad- Mirpurkhas Dual Carriageway Road by Sindh province. The structure of IPDF at federal level is as under Figure 2.10:

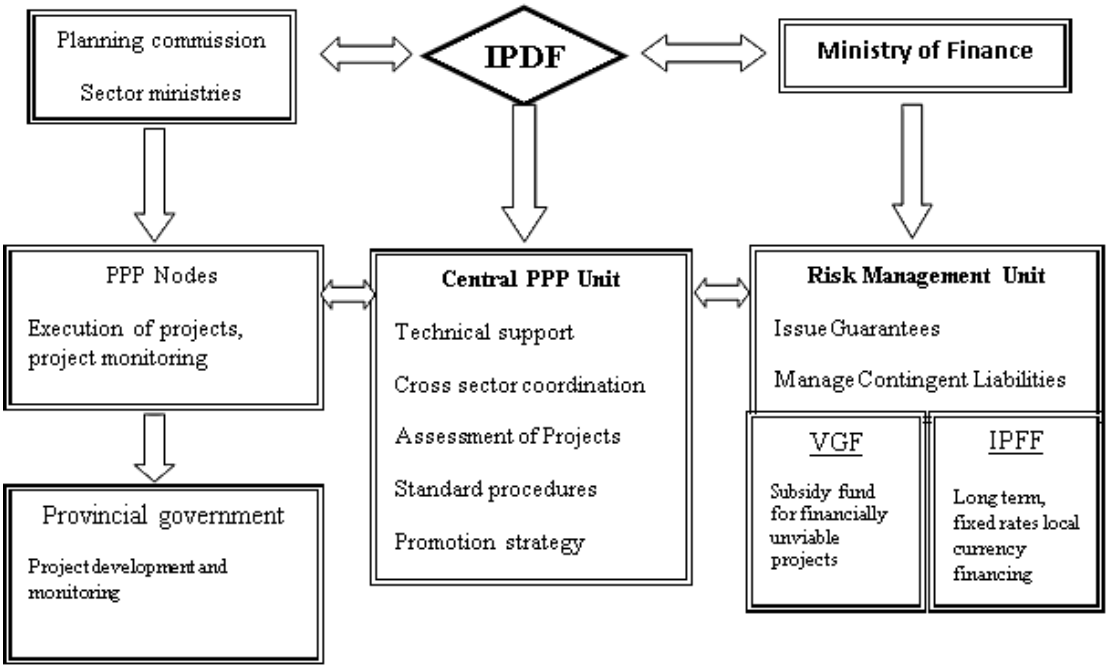

Figure 2. 10 Official PPP Structure in Pakistan

(Source: www.ipdf.gov.pk)

2.6 Types of PPP

Over last decade, PPP across the world has been adopted in number of forms or types by the governments and private sectors based on mainly the level of participation of private sector in the delivery of PPP project. Fast growing popularity of PPP is generating more new concepts, forms and ideas around the world. Each PPP model involves varying levels of sharing risk among both public sector and private operator, along with differences in arrangements and contract forms. The basic PPP contract types or forms are:

a. Service Contracts
b. Operational and Management Contracts
c. Lease Contracts
d. Concessions
e. Build–Operate–Transfer (BOT) and similar arrangements
f. Private divestiture

2.6.1 Service Contracts

In the service contract, Public and private sectors develop partnership with each other for the completion of specific tasks over short period of time normally ranging from few weeks to few years such as toll collection, installation, maintenance and reading of electric or water supply meters, waste collection and similar other technical systems etc. The service provider earn a fee from the public sector to manage a specific part of a public service (Wilson 2009). Service contracts are more suited for fulfillment of operational requirements where public sector

benefits from private sector technological, managerial and cost savings techniques and expertise. During service contracts, the ownership of facility or system lies with public sector.

2.6.2 Operation and Management Contracts

In this arrangement, private party will manage all aspects of a public service without bearing the risk of financing, operating, maintaining, repairing, or investing the capital for the service. The life-span of the management contracts extends from three to five years. These contracts usually involve the payment of a fixed fee plus a variable component (Gupta and Sravat 1998). Operation and management contract can be undertaken for the provision of certain facilities like at railway stations, airports, sea ports or public parks, golf courses etc.

2.6.3 Lease/ Purchase

This arrangement consists of leasing the publicly operated assets to the private contractor. The private contractor will bear the risk of operating, repairing, and maintaining those assets. In specific circumstances the private contractor also carries the liability of tariff collection and the related risks. On the other hand, it is not a responsibility of contractor to invest the capital or to replace the leased assets. The life-span of leases contracts is mostly lengthier. Lease of a market, bridge or water system are typical examples of this model (Shen, Platten *et al.* 2006). Risk of service delivery along with the financial risk for operation and maintenance are shifted to the private sector operator from the public sector (Grimsey and Lewis 2002).

2.6.4 Concession

A concession makes the private sector operator which is termed as concessionaire responsible for the full delivery of services in a specified area, including operation, maintenance, collection, management, and construction and rehabilitation of the system. Significantly, the risk of the all capital financing is borne by the private sector. Although the private sector operator is responsible for providing the assets, but assets remains publicly property even during the concession period. The responsibilities of public sector are to ensure required performance levels of the deliverables (Grimsey and Lewis 2002). The ownership of the existing infrastructure which is being operated or managed by the concessionaire remains with the government. Government is assumed to be responsible to check that the assets are appropriately being handled and sustained throughout the concession period and they are returned back to the government in proper condition at the end of concession period (Broome and Perry 2002).

2.6.5 Build Operate and Transfer (BOT)

BOT and similar arrangements are a kind of specialized concession in which a private firm or consortium finances and develops a new infrastructure project or a major component according to performance standards set by the government (Grimsey and Lewis 2002). The service provider bears the liabilities of designing, constructing, managing, operating, maintaining and repairing the public service infrastructure through its own capital investment and self-generated revenues. The government enjoys the ownership of this public service infrastructure facility at the

end of the concession period. Table 2.5 summarizes the various BOT options being used worldwide:

Table 2. 5 BOT Options

Build-Transfer-Operate (BTO)	This type of contract allows the concessionaire to build and operate for a preset period of time followed by the relocating all the facilities and paraphernalia to the client.
Build-Own-Operate (BOO)	The developers purchase the facility through installments from the client. Here keeping facility running and the expenditure involves over the repayment period is saving to owner. After this, ownership reverts to the concessionaire.
Build-Transfer-Operate (BTO)	The facility is built by a concessionaire under agreement and payment is partially made however the concessionaire remains the operator and earns the balance expenditures or revenue.
Build-Lease-Transfer (BLT)	The developer builds a facility and after completion leases out the facility to other party till completion of the contract period. Later it is handed back to the owner
Design-Build (DB)	A turnkey method is similar to this, the developer not only designs but also construct and monitor progress.
Build-Operate-Transfer (BOT)	In BOT permission is given to constructor to design, finance, maintain, and operate a facility for a specific time period. During this tenure the constructor is allowed to toll the facility and earn its share for the investment made in the facility.
Build-Own-Operate-Transfer (BOOT)	This method allows the construct to invest, build and then lease out on long term ownership, till revenue is sufficiently generated through charging the users, at end of contract period it is returned back.
Design-Build-Finance-Operate (DBFO)	This type of BOT is complete privatization. The projects after financing, designing, construction and maintenance are left with the developers. The charges of the facility are also taken by the constructor.
Build-Lease-Transfer-Maintain (BLTM)	In this BOT, the constructor finance the project as well as design and construct and later return to government on lease for some fixed period of time at a determined cost for retrieving investment.
Lease-Renovate-Operate-Transfer (LROT)	Used facilities requiring renovation or up gradation can be taken under this type of BOT arrangement. The developer invests for the renovation of the facility and pays a leasing fee to government. The developer is authorized to operate the facility for a determined time period and also to collect charges by the user.

Basic BOT structure has multiple options including build–transfer–operate (BTO) in which facility is transferred to the government at the end of construction period instead of the end of the contract and build–own–operate (BOO) in which the private contractor build and operates the facility and keeps the ownership without transferring to the government. Under a design–build–operate (DBO) scheme, a single contract is let out for design, construction, and operation of the infrastructure project without giving the ownership in private hands. With the design–build–finance–operate (DBFO) arrangement, the liabilities of designing, building, financing, and operating are shared and transferred to private sector partners. DBFO arrangements vary significantly in terms of the scale of financial obligation that is transferred to the private partner (Grimsey and Lewis 2002).

2.6.6 Private Divestures

Private divestiture implicates the sale of assets or shares of a state owned entity to the private sector. Divestitures may be attempted in multiple modes, can be either partial or complete and may be used as a vehicle to transfer the ownership of assets from the government to private companies.

Figure 2.11 shows the different types of PPP procurement model undertaken since 2001; BOT and Concession contracts are the leading procurement models which make 73% of total PPP contract types which show that different government around the world are more interested that private investors should finance and construct the PPP projects.

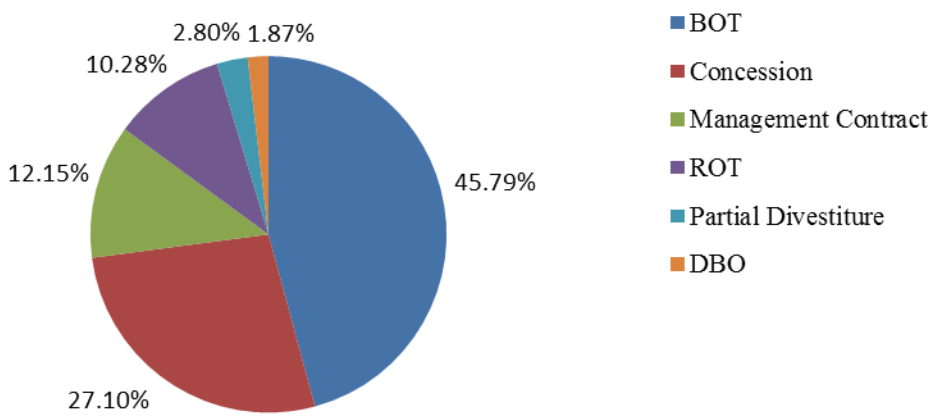

Figure 2. 11 Comparison of PPP Models in Asia Leaving Service Contract (2001-2012)

Source : World Bank, IPID, 2012

2.7 Summary

PPP model of procurement proves quite beneficial for providing public infrastructure if they are followed by proper regulation framework. Developed countries have established PPP structure from long term experiences and achieved a plenty of successes to facilitate the public with not only economic but also social infrastructure. There are many PPP models which can be benefited from in terms of cost saving and risk transfer according to the constraints and requirement of both public and private parties.

Chapter 3

RESEARCH METHODOLOGY

3.1 Introduction

In this chapter the method, tools and techniques adopted to conduct this research are discussed in detail. This is a qualitative research based on semi-structured interviews targeted at experts and professionals of PPP projects in Pakistan.

As the objective of this research was to uncover the risks and opportunities of PPP projects, the review of literature was the most significant component of the research. Therefore detailed in depth literature review was conducted to chalk out the different aspects of PPP models with their impacts on the outcomes of projects.

Established principles of conducting qualitative research were adopted to meet the research objectives. In consideration of the scope and limitation of the research, major emphasis was given to the literature review which was more or less a continuous activity. In order for the study to become specific with the local context, practitioners with relevant experience of PPP projects were engaged. For data gathering, a series of interviews were conducted, apprehending major risks and opportunities from the experience of these experts. Differences in the observed opinion were deeply examined and compared.

The subsequent sections flash the research method employed in this research.

3.2 Understanding Research Methodologies and Designs

Methodology is a body of knowledge that enables researchers to explain and analyze methods, indicating their limitations and resources, identifying their presuppositions and consequences, and relating their potentialities to research advances (Miller 2002). Furthermore, it underpins the types of questions that can be addressed and the nature of the evidence that is generated. Therefore, the issue of research methodology is important to any study. Appropriation between research paradigm, type of data, and collection methods has significant implications upon the research findings. The research methods are predominantly divided into two methods i.e. quantitative and qualitative methods.

3.2.1 Quantitative research

According to Hoepfl (1997), researchers who use quantitative research employ experimental methods and quantitative measures to test hypothetical generalizations and the emphasis is on the measurement and analysis of causal relationships between variables. Golafshani (2003) states that quantitative research allows the researcher to familiarize him/her with the problem or concept under study, and perhaps generate hypotheses to be tested. In quantitative research: (1) the emphasis is on the facts and causes of behavior, (2) the information is in the form of numbers that can be quantified and summarized, (3) the mathematical process is the norm for analyzing the numeric data and (4) the final result is expressed in statistical terminologies.

3.2.2 Qualitative research

Golafshani (2003) states that qualitative research uses a naturalistic approach that seeks to understand phenomena in context-specific settings, such as *"real world setting where the researcher does not attempt to manipulate the phenomenon of interest"*. Qualitative research, broadly defined, means *"any kind of research that produces findings not arrived at by means of statistical procedures or other means of quantification"* (Strauss and Corbin 1990) and instead, the kind of research that produces findings arrived from real-world settings where the phenomena of interest unfold naturally. Unlike quantitative researchers who seek causal determination, prediction, and generalization of findings, qualitative researchers seek instead illumination, understanding, and extrapolation to similar situations (Baxter and Jack 2008).

3.3 Choosing the Approach

The main objective of the research is to address the risks and opportunities in PPP projects in Pakistan which makes this research predominantly *"investigative"* and *"exploratory"*. After careful consideration to different approaches it was deduced that for an effective investigation into the research questions it would be best suited that the research design be qualitative. It supports deeper and more detailed investigation which is the intent of this research. The instrument chosen was interviews as the research questions posed were more concerned on the depth and not the breadth of the investigation.

3.4 Essence of Case Study Method

A case study research is an approach which includes qualitative data collection and analysis (de Weerd-Nederhof 2001). The strategy emphases on understanding the dynamics contemporary within single setting and can employ an embedded design, that is, multiple levels of analysis within a single study. Hence the case study method supports deeper and more detailed investigation of the type that is normally necessary to answer what, how and why questions.

The forms of research questions in this study emphasis on situations in which the researcher has no control over events but on contemporary events which requires the adoption of procedure suggested by Yin (2013) as shown in Figure 3.1. The main arguments for choosing case studies for the research strategy are the descriptive nature of the research (not requiring control of events but rather documenting them) and the dominance of *"how"* and exploratory *"what"* questions. Although the research questions were reformulated by the researcher several times during the literature review process, these arguments have remained valid throughout the study.

The next step was to determine the type of case study, Baxter and Jack (2008) categorize case studies as explanatory, exploratory, or descriptive. They also differentiate between single, holistic and multiple case studies. The aim and objectives of this research would be better addressed using exploratory case study as it allows the researcher to explore situations in which the intervention being evaluated has no clear, single set of outcomes (Yin 2013).

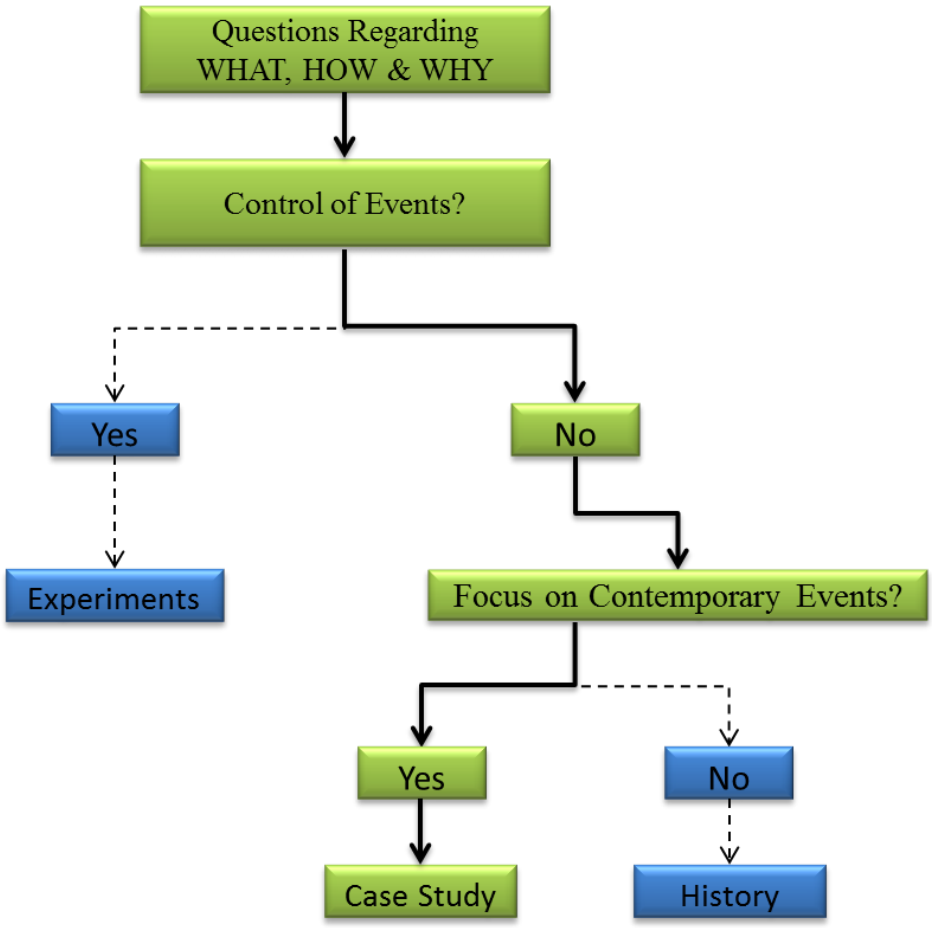

Figure 3. 1 Choice of Research Method for this Study (Yin 2013)

3.5 Field Procedures Used in this Research

To avoid being overwhelmed with mountains of data, instruments and protocols should be established for the data collection (Patton and Appelbaum 2003). While data collection is a constant process of grasping good opportunities as well as setting structured plans for observing events, interviewing sources and reviewing documentation, it is important that the focus remains on the study objective. Figure 3.2 shows the protocol and field procedures of data collection and analysis adopted in this research.

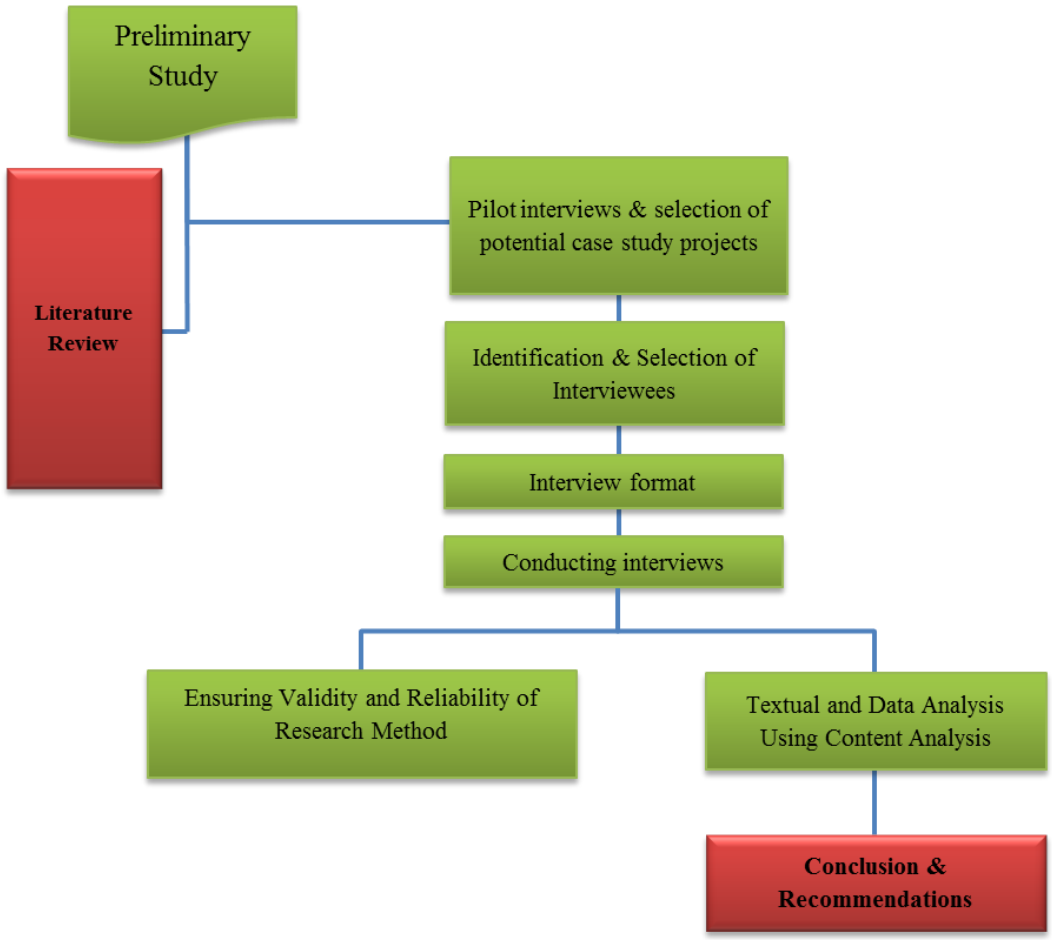

Figure 3. 2 Methodology used in this research

3.5.1 Preliminary study

In conjunction with the extensive literature review, a preliminary study was conducted to establish the realm of this research including its scope, limitation, objectives, etc. Resultantly, the research plan was evolved with the scope and objectives were established. More importantly, the limitations of the research were identified that comprehensively mark the domain of the research project. It was decided that the domain of the research should be the PPP projects restricted to the road and hydropower sectors of Pakistan.

3.1.1 Pilot interview and selection of potential case study projects

Two pilot interviews were conducted with valuable expert on PPP projects in light of the preliminary study in order to fine tune and develop the interview questions. Predominantly, semi-structured interview approach was used in order to conduct the research (DiCicco-Bloom and Crabtree 2006). This approach facilitates the collection of data on a much broader spectrum and allows the researcher to articulate while gathering information (Taylor-Powell and Renner 2003).

The identification of potential PPP projects for the case study was a secondary output of interviews, as shown in Table 3.1. Primarily, only completed PPP projects of road and hydropower sector were selected afterward another project currently in commencement phase was also incorporated in the study due to its critical nature.

Table 3. 1 List of Case Study PPP Projects

Project	Sector of Infrastructure	PPP Type	Status
Project 1	Road (Tunnel)	BOT	Operational (6th Year)
Project 2	Road (Service Areas)	BOT	Operational (4th Year)
Project 3	Road (Motorway)	BOT	Contract Awarded
Project 4	Hydropower	BOOT	Operational (2nd Year)

3.5.2 Identification and selection of interviewees

On the basis of preliminary study, pilot survey, detailed deliberations and extensive literature review criteria for the selection of interviewees were developed. The idea here was to identify people who have been involved in PPP projects approval and planning stages, and the procurement process including management and implementation. To avoid the bias, equal participation of interviewees was

ensured from both public and private sides. A total of 19 interviewees from 8 different organizations were selected, out of which 4 were public organization representatives and 4 were from private organizations.

3.5.3 Interview format

Linking back to literature and questions the inverted funnel format was used starting with narrow closed questions and build to ask broader open questions. The aim was to have an interview with an open character (short questions, long answers, let the participants tell their own story, use their own words). The aim was to extract as much data as possible from the respondents and intervention was only made to steer them back to the questions and stop the discussion from drifting far from the topic. Therefore, it was explained that interview questions can be of following types such as introductory, follow-up, probing, specifying, direct, indirect, structuring, silence and interpreting questions (Kvale 1996).

3.5.4 Conducting interviews

Interviews were tape recorded and afterwards transcribed and checked by interviewee. In conducting the interviews the researcher kept the following points in mind. (1) Interview should be completed within one hour, (2) About one and half hour per interview was allocated to allow some time to break the ice. And when the need for more time was realized arrangements were made to see the interviewee for a follow up interview which happened in very limited circumstances.

3.5.5 Analyzing data using content analysis

For the analyses of qualitative data collected, data analysis technique called content analysis is used. Patton (2005) defines content analysis as *"any qualitative data reduction and sense-making effort that takes a volume of qualitative material and attempts to identify core consistencies and meanings"*. In content analysis the researcher decides in advance what is being looked for and measured through the qualitative research, and then develops the framework of assessing the content of the data (Miles and Huberman 1994). In content analysis the text is coded or broken down into manageable categories on a variety of levels which can be words, phrases, sentences, or themes which are then examined and analyzed. In this study the technique of content analysis as depicted by Miles and Huberman (1994) was adopted to analyse the case study data. This was done by first coding the individual transcript data into sentences and themes followed by categorizing data based on these themes and finally summarizing all individual data to present.

3.5.6 Ensuring validity and reliability of research methodology

The researcher aimed to incorporate all four tests identified by Yin (1989) as shown in Table 3.2 i.e. construct validity, internal validity, external validity and reliability into the research study as follows:

Table 3. 2 Case Study tactics for four design tests (Source (Yin 2013))

Tests	Case-study tactic	Phase of research in which tactic occurs
Construct Validity	Use of multiple sources of evidence	Data collection
	Establish chain of evidence	Data collection
	Have key informants review draft case study report	Composition
Internal validity	Pattern matching	Data analysis
	Explanation building	Data analysis
	Time-series analysis	Data analysis
External validity	Use replication logic in multiple case studies	Research Design
Reliability	Use case study protocol	Data collection
	Develop case study database	Data collection

- **Construct Validity:**

The researcher engaged in a systematic process of establishing construct validity during the data collection process by using multiple sources of data and evidence as well as establishing a chain of evidence. Construct validity was also ensured during write up composition stage of the case study by asking supervisors to review a draft case study report.

- **Internal Validity:**

The internal validity was ensured by conducting pattern matching and explanation building during the data analysis.

- **Reliability:**

Reliability was ensured by using and adhering to the case study protocol during the research.

- **External Validity:**

External validity was ensured by using replication logic in multiple case studies in the research design phase, individual case study reports and cross case analysis.

3.6 Ethical Issues in Interview

Ethical issues such as informed consent, confidentiality and consequences for the interviewee were taken into account. Research subjects were informed about the purpose of the investigation and the main features of the design. However, considering the nature of the cases cited and profile of the interviewees most of the subjects desired to remain anonymous. Thus for the purpose of this all the critical information of the cases studies and information regarding the interviewees is kept confidential.

3.7 Summary

The above chapter explains in detail the research methodology deployed for this research. Primarily qualitative interview based research methods are deployed to probe into the objectives of the research. Interviewees were identified and selected based on their core competencies and experience of the research topic. Semi structured research interviews were developed and high quality interviews were conducted as per the established guidelines.

Chapter 4

RESULTS AND DISCUSSION

4.1 Introduction

This chapter aims to present the comprehensive analysis on the collected data to uncover prevalent trends as opined by the public and private parties about the risks associated with the PPP projects. Khan, Jamil *et al.* (2008) found that *"the key to a successful implementation of a PPP infrastructure project is in depth analysis of all risks associated with the PPP projects"*. Hence, the study focuses on meticulous identification of the critical risks followed by the analysis of their impact through qualitative research. For this a total of 19 in depth interviews of PPP practitioners from 8 different organizations were conducted giving them a topic rather than a set of questions. A careful consideration is made as to get the data from both public and private parties to avoid bias. Afterward technique of content analysis is used at both descriptive and interpretative levels. Profile of the interviewees for this exploratory study is given in Table 4.1.

4.2 Risk and their Implications

Risk is the uncertainty of outcome, within a range of potential exposures, arises from a combination of the probability of events and the impacts on outcomes. So, risks on the project are mainly responsible for the non-achievement of planned objectives therefore they are required to be handled within prescribed timeframe and that is early stage during the preparation of feasibility study when project has yet to commence.

Table 4. 1 Profile of the interviewees

Interviewees	Party	PPP Party	Position	Experience of PPP	Qualification
Interviewee 1	Organization 1	Public	Director, PPP Cell	11	M.Sc (Civil)
Interviewee 2	Organization 1	Public	Director, PPP Cell	6	Ph.D (Finance)
Interviewee 3	Organization 1	Public	Deputy Director, PPP Cell	6	B.Sc (Civil)
Interviewee 4	Organization 1	Public	Assistant Director, PPP Cell	7	M.Sc (Civil)
Interviewee 5	Organization 2	Private	Manager, BOT	2	B.Sc (Civil)
Interviewee 6	Organization 2	Private	Manager, Contracts	5	BE (Civil)
Interviewee 7	Organization 2	Private	Assistant Manager, Claims	4	BE (Civil)
Interviewee 8	Organization 2	Private	Financial Analyst	3	B.Sc (Economics)
Interviewee 9	Organization 3	Public	Infrastructure Specialist	4	CA
Interviewee 10	Organization 4	Public	Director	7	Ph.D
Interviewee 11	Organization 4	Public	Deputy Director	3	M.Sc (Civil)
Interviewee 12	Organization 4	Public	Deputy Director	4	MBA
Interviewee 13	Organization 5	Private	CEO	10	MBA
Interviewee 14	Organization 5	Private	Manager Planning	7	BS Commerce
Interviewee 15	Organization 5	Private	Director	4	CA
Interviewee 16	Organization 6	Private	Project Manager	7	MBA
Interviewee 17	Organization 7	Public	Director Finance and Risk Management	10	CFA
Interviewee 18	Organization 8	Private	CEO	12	Ph.D (Civil)
Interviewee 19	Organization 9	Private	Manager Planning	3	M.Sc (Civil)

Therefore, presence of effective, reliable and practical risk management system at any PPP project not only helps in the planned execution of project activities but also makes favorable and conducive atmosphere for private investors to work with confidence. However the understanding of risk identification and allocation is a key variable for a successful PPP implementation (Abdel-Aziz 2007). According to Interviewee 2, in the current situation of Pakistan, competent risk management is crucial because of the dynamic political and security risks along with the normal risks associated with any PPP project.

4.3 Analysis of Risk in PPP Road Sector

In road sector of Pakistan, the risks to a PPP project may be subjected to numeral variables such as the nature of project scope, location of the project and the PPP model implemented (Noor, Khalfan *et al.* 2012). So, multiple PPP risk factors are revealed from the different perspectives (e.g. public & private) and can broadly be categories as financial, political and management risks. The subsequent sections describe the details of the analysis employed in this research.

4.3.1 Financial Risk

Finance is one of the basic requirements for PPP that emerged during the analysis. All the interviewees agreed that PPP should be preferable over the traditionally procured projects as the emphasis is on lack of funds making this an attractive opportunity for the investors. When asked about the primary needs for PPP, Interviewee 9 stated that *"less than half of the infrastructure investment needs can be met with public funds under the MTDF of the GoP and rest are to be fulfilled through PPP"*. As Pesnani and Ahmad (2010) reported that the country requires

private sector investment in infrastructural development at 5% of GDP per annum (US $ 15 billion) to meet the national GDP growth of 7 - 8%. Similarly Khan, Jamil *et al.* (2008) also concluded that developing country like Pakistan which requires massive infrastructure to encounter the several development challenges of future mostly have the budgetary constraints to commence the development projects. Therefore to meet with the future massive infrastructural development challenges, GoP has to depend upon PPP procurement like other countries in the region through proper planning and management to uplift her weak economic growth trends.

The interviewees from Organization 1 felt that the needs for finances were the main reason for choosing PPP procurement method. Interviewee 4 reported that *"PPP is beneficial for the country because of off-budget financing and it has no burden on PSDP".* He further added that "*in case of PSDP, due to the uncertainties of cash flow to the projects, they have suffered and are suffering, so the PPP is the best solution"*. Similarly in view of Interviewee 8, *"there are no construction delays in PPP projects mainly due to the continuous availability of finance".* Therefore the construction of the Project 2, as reported by Abrar (2007), was completed ahead of its schedule. These might be the reasons that public party is more eager and facilitative for PPP.

On the other hand Interviewee 5 from private organization considered PPP as a very attractive choice of business opportunity as they need a continuous cash inflow for very large setup of human and technical resources. Interviewee 6 felt that as a result of low competition in some projects in areas of security risk, sometime public party goes for negotiated bidding directly instead of competitive bidding

which yields extra financial benefits. He also added that *"generally private party arranges its finance for the project through local and international banks and investors which assist in uplifting the economic growth of the country"*. But the Interviewee 7 had an opinion that owing to more risky environment of our country international banks incorporate extra risk allowances that result in very high rate of return (ROR) as compared to other countries.

The above statements show that a developing country like Pakistan has a dynamic need of PPP to fulfill its infrastructure desires but the question arises as to what are the barriers across it? While stating about the deficiencies of the organization towards PPP, Interviewee 1 gave an example of Project 3 that where they are still unable to establish methods for proper estimation of VfM. He further added that *"Project 3 is an example where we received bids having price very much differing to our engineering estimates and even they were different from each other".* Whereas precise estimation of VfM is the primary objective of any PPP project and sustaining it throughout the contract life an utmost challenge (Henjewele, Sun *et al.* 2011), but the incompetence of the public party towards the precise estimation of the most important aspect (VfM) of the PPP caused termination of Project 3 twice.

4.3.2 Political Risk

While talking about the risks in current scenario, Interviewee 3 told that out of the several risks identified in their projects, security risk and lack of political support were the major risks which yielded in terms of delays. He further added an example of Project 2 where major problem during procurement as well as its

implementation was the security situation of the country. According to him *"when we advertised this project, it was a financially feasible but when we took it to the market then at the time the (law and order) conditions in the country were such that we did not get the intended positive response".* As a result of it the project took two years from initial advertisement to the final award as mentioned above. Still the project is facing problems due to the same fact in its implementation. In fact when the public party announced the project the situation in country was not stable otherwise it was a promising project. But when they went into bidding the security situation deteriorated making the entire endeavor risky. Along with the above stated security risk, there was also political factor which was affecting the investor's perception of political risk (Interviewee 1). Similarly Khan, Jamil *et al.* (2008) ranked the political risk as the highest influencing constraint against the successful implementation of PPP in Pakistan.

Interviewee 4 told that political factor has a major influence for public party which is external to the organization. He further elaborated the case of the Project 3 which is a severe example of political influence. Initially BOT delivery method was adopted for and a renowned construction company in 2005 offered a proposal for expected cost of PKR7 billion. After negotiations the concession was awarded in Sep 2006, but was terminated by the government in July 2007 mainly due to *"political pressure"*. Afterward Employees Old Age Benefits Institution (EOBI) in 2010 started taking interest and even the offer of construction was approved, but Transparency International Pakistan pointed the inability of EOBI to undertake infrastructures being out of mandate. Then in July 2012, the public party signed a contract with a Malaysian company at an estimated cost of PKR 18.26 billion for the

construction period of 30 months and concession period of 28 years but terminated due to many reasons – the reported was its inability to close financial matters within the deadline. Later on the project is awarded to a military organization in Mar 2015 at a cost of PKR 36 billion. Therefore the instable political environment of the country, instability in policies and use of political pressure and influence adversely affected procurement of this project (Jamal 2012). Similarly, Interviewee 1 had and opinion that *"political factors were the most severe to influence in this project".* Hence a well-publicized Project 3 of a motorway that symbolizes the exposure to political risk and casts a heavy cloud over the government's ability to complete PPP transactions.

Interviewee 7 described the example of Project 1 in which a military organization as a private party had taken the risks for financing, designing, construction and operation and toll collection. The critical risk identified in this project was the political. As explained by Interviewee 5, when public party advertised the project and invited the bidders for competitive bidding the political pressure was exerted on public party to award the project to the military organization directly by negotiated bidding rather than competitive which later proved to be a positive decision of government considering the local conditions. But the toll rates in line with financial model of the project have not been implemented since 6 years due to law and order situation and interference of local civil administration. Present toll revenue cannot even meet the operation and maintenance (O&M) expenses of the project.

4.3.3 Management Risk

Since PPP has not much developed yet in Pakistan and not many people are aware of its concept and implementation details. The level of awareness towards standard terms such as concession agreement, role of the both parties etc. is depressingly low. All because of these, the interviewees felt that their role crosses over to all the three phases that is planning and development, construction, operation and transfer. Severe example of management risk can be seen in Project 3 where the cost of the same project of 136 km motorway is increased from 7 billion to 36 billion (almost 500%) in 7 years which is a policy failure. One of the main reasons found by Jamal (2012) was the incompetency of the public party to evaluate and judge the suitability for the planned potential project. Similarly Interviewee 9 stated that *"owing to the infancy stage of PPP in Pakistan, we are still unable to develop comprehensive policies".*

Interviewee 2 from public party explained that each section or department of the organization is responsible for their phase. The usual problem is that when the Project Director (PD) is appointed there, a big debate erupts in the organization as to under which section's General Manager he or she has to report due to phase-wise evaluation of the project. This crossing of domains of planning and construction causes problems. That is the dilemma they face that who is in a better position to implement the project? The crossing over of domains of planning and construction creates friction in the organization which adversely affects project implementation. As Interviewee 4 stated that *"I personally feel if the planning guys jump into the domain of construction then their own work suffers".*

The private sector in Pakistan is also not very much educated to fully understand what PPP is for example the respondents stated that they cannot go in the design domain and insists that public party enter in the design domain for them. Interviewee 1 from public party stated that they can only broadly guide them (private sector) of what is required and how to translate it into the detail designing is their responsibility. Also how they get finances for the project, and how they construct it is their issue, public party just requires the performance of the project. Interviewee 5 from private party also admitted that at this point in time the capacity has not developed with in their organization as well as other private organizations to understand what PPP is, what its complexities are, what the problems are and how to tackle them. Also how to treat it i.e. how it should be treated by their organization and how private sector should treat it. Similarly Noor, Khalfan *et al.* (2012) found that not only is there insufficient financial availabilities, there are also huge gaps in public sector potential and capacity to build and operate infrastructure. Hence there is a lack of understanding and awareness for PPP among the public and private parties. The probable reasons for that is lesser experience of PPP mode as compared traditional procurement.

Interviewee 2 gave an example of failure of Project 1 due to the demand risk; stated that *"Low toll rates, low traffic volume and high rate of interest have complicated finances of the project".* Then it is suggested by Interviewee 6 that public party should either buy back or renegotiate the finances with them. Abdul-Aziz (2001) stated a similar example of Malaysia where project returned after seven years to government hands after it had been relinquished by the private sector. In both the cases the problems were not forecasted in the planning phase by public

party, as a consequence of that public party had to suffer in terms of financial compensations. Table 4.2 summarizes the impacts of severity of the different major risks in road sector.

Table 4. 2 Summary of impacts of risk in Road Sector

	Impacts of Risks		
	Financial Risk	**Political Risk**	**Management Risk**
Project 1	• No burden on PSDP due to off-budget financing • No construction delays due to continuous cash flow • Attractive choice for business opportunity	• Local resistance • Toll rates couldn't implemented • Litigation with the client	• Bypass of competitive bidding process
Project 2	• High ROR	• Law and order situations • Lack of private interest • Delay and scope limitations	• Terminated due to land acquisition issues • Cost increased from 7 billion to 36 billion in 7 years
Project 3	• Failure in estimation of VfM • Incoherent Bids	• Terminated due to resistance against fencing along the motorway	• Terminated due to land acquisition issues • Cost increased from7 billion to 36 billion in 7 years

4.4 Allocation of Risk in PPP Road Sector

Interviewee 2 elaborated that a commercial feasibility is carried out for the identification and assignment of the risk. Typically it is done in a way that *"we ask the private sector that since you are bringing the money, designing, constructing and operating the facility, so all the pertinent risks will be borne by you"*. There are certain risks which private party takes on itself for example forcemajeur. All these risks are identified in the feasibility and during negotiations the private party tries to transfer some risks to the public party while the public party tries to do the same. But in some cases the public party also allows changes to the standard contract agreement and concession agreement, *"we do minor amendments according to the powers vested in us"* as stated by Interviewee 1.

Interviewees 5&8 stated a preference for design, construction and operation of a PPP project but reluctance to take on the demand risks. They also reported about the practice and a continuous battle of transferring as much risks to the other party in case of PPPs.

All the interviewees from private party suggested that there is a dire need for finances for infrastructure projects and they feel that the public party should capitalize on investment opportunities put forward to them and go for direct negotiations. Interviewees 5&8 stated that if the public party wanted to develop infrastructure they should bypass the procurement process and procedures. The reason given was that the market for PPP was not that much developed and they should go straight for direct negotiations and avoid unnecessary delays of procurement procedures. The evident bias can be justified by the interest of private

party representative; however such partial decision making by public party may result in disregard for developing the maturity of potential stakeholders.

In general most of the interviewees felt that in PPP it needs to be a balanced approach; transferring of risks unduly on each other is not good for both the parties and may result into overall failure. It affects all and in the end it is a loss to the construction industry, it damages the investment in the country and ultimately lose-lose situation for everyone. Interviewee 5 advised *that "no one would invest in Pakistan in future if we have failures due to unjust risk sharing and transfers".* Interviewee 1 gave example of a PPP project of a motorway in Hungary and what happened later was that no traffic came on the motorway, the concessionaire went in default and later the government took over and declared it as a major success; without paying a single penny they got a motorway project from the private sector. But it is not fair as they took the money and they took the facility as well! It was due to this unfair attitude that no one invested in Hungary anymore for 10 years. The interviewees all were in consensus that there needs to be a balanced approach on both sides.

4.5 Analysis of Risk in PPP Hydropower Sector

In Pakistan the regulatory requirement as per policy states that BOOT is used in the organization for hydropower projects since they are of strategic nature to Pakistan and have to be transferred to the Government. This is the reason the Interviewee 15 reported that hydropower projects are more costly and risky as they have involve equity redemption at the end of lease term when transferring the asset.

Thus the financial risk is dominating that emerged from the research followed by the political and management risks in hydropower sector in Pakistan.

4.5.1 Financial Risk

Power shortage is one of the chronic problems hampering Pakistan since 1994, as reported by Interviewee 9 *"the problem had become such that power supply fell short of demand by almost 3000 MW during peak load hours"*. On a routine basis, this leads to imposed cut-off in the supply of electricity to consumers during peak hours resulting in load shedding which is common household phrase now in Pakistan. Similarly Noor (2011) found that *"the unreliable power supply shattered the industrial progress"*. Thus a gap between demand and supply which is estimated to be growing at a rate of 7-8 % per annum compelled the GoP to focus in this sector on priority basis. However, the Prime Minister declared that *"at the moment the government doesn't even have enough money to build a single (new) power plant"* (The Nation, 2015). The rationale behind this is a huge initial investment which is prerequisite for the production of electricity on cheaper price, as Interviewee 14 also specified that *"to install a megawatt project you require around US$ 2 million in any case"*. If power sector projects were implemented through the public funds, *"they would absorb a significant portion of national budget allocation"* (Interviewee 9). At the same time the investing a huge capital in new power projects will lead to compromise on the cumulative allocation for health, education and agriculture sectors in Pakistan (The Nation, 2015). Hence the enormous quantum of requires investment compared with the constrained funding potential of the national exchequer, was not conducive to allocation of scarce GoP funds for energy. This situation calls for immediate intervention by the GoP through adoption of policy

measures aimed at massive resource mobilization for investment in the power/energy sector. Therefore, in order to save governmental allocations of funds for other vital sectors, private sector investment for power production can be considered as the best and ultimate solution.

All the interviewees reported that the largest barrier in effective implementation is the availability and accessibility of finances owing to the fact that power infrastructure are highly capital intensive. As Interviewee 13 reported that *"most of the issues that come to us are mostly related to finance".* The interviewees felt that the local banks in Pakistan have their own limitations when it comes to investment in power sector as they have to manage their own portfolio of investment as well as they have less finances available as compared to international banks or financial institutions. In case of international financial institutions and banks the respondents felt that they have their own strict requirements. As Interviewee 10 stated *"the major problems that I have noticed are financial problems due to which projects get delayed normally. If the financial close of the project normally was to be achieved in 6 months, due to these kinds of issues it extends to 12 months or sometimes even more".* Interviewee 12 quoted with a saying in Urdu that translates to *"you should sing the tune of the person whose food you eat",* similarly Interviewee 10 stated with English saying *"beggars can't be choosers".* Thus it can be concluded that underdeveloped or developing countries cannot dictate their own terms when they get finances from others and international markets follow their own terms and conditions. As Interviewee 15 reported that *"they are very rigid with their procedures; for instance when it even conflicts with the PPRA rules in Pakistan they do not show flexibility for our rules".* In a few instances some of Pakistan's major

and large public sector organizations had to be disintegrated to smaller units or even privatized because the lenders felt that they are not flexible for their interests.

4.5.2 Political Risk

All the interviewees felt that the political pressure is the most severe factor that is external to the organization and affects it adversely. The Interviewee 11 reported that the political pressures are usually in such a way that politicians influence the project procurement. As Interviewee 13 stated that *"politicians sometimes want us to award the project to a company which doesn't have the capacity to implement it".* Other organizations or other external factors do not affect them as much as political pressure, as Interviewee 11 stated that *"it is the only external factor that I am facing in my organization".* Interviewee 10 had a view that *"the transparency of the procurement becomes questionable for example recently the rental power (fast track) project is good example and it's all over the news as well. As such there is nothing wrong with the projects but there is no transparency and competition in the process of how they have been procured which raises many doubts and questions".*

4.5.3 Management Risk

When compared with other infrastructure projects, the power sector experiences minimum scope creep and scope change. As Interviewee 12 stated that "*[scope] is clearly and precisely defined prior to the execution"*. All the interviewees stated that due to the shortage of the potential bidders in power sector the scope definition and detailing is done completely as early as possible, so that no

further delay occurs and contract could be made with the private party on first come first serve basis.

The interviewees from public party felt that Organization 4 did not have any bureaucratic issues, as Interviewee 10 reported that *"our organization doesn't come directly under government influence and the employees are not regular government servants, we are contracted so our company has the ability to provide independent, unbiased, practical and expert opinion"*. Similarly Interviewee 12 stated that they do not have the typical government bureaucratic style of moving files and then wasting time in delayed decisions. On the other side interviewees from private party told that *"public sector is more casual in their attitude towards the project as no personal stakes of theirs are involved in the project unlike the private investor so any delay encountered matters more to the private investor than to public officials or organizations"*. Thus private sector is much more efficient in running and doing projects than the public sector.

The case study Project 4, being the first independent (hydro) power production (IPP) project in Pakistan that has successfully achieved the financial close, had to face a number of hurdles. First of all at that point in time there was no framework available for the bankability of the project during this whole course giving rise to a number of issues; for instance under 1995 policy there was an upfront tariff of US 4.7 cents per KWh (unit) so to avoid months in negotiating tariff an upfront tariff was given. But from the Government side the power purchaser objected to this after two years i.e. in 1997 and the power purchaser succeeded in withdrawing the upfront tariff as Interviewee 14 said that *"it was the first shock this*

project received". The power purchaser offered to re-negotiate the tariff for the project and during that the power purchaser imposed a very low tariff of 3.1 cents per unit over the company as Interviewee 14 said *"it was not agreed but rather imposed"*. The company accepted to this tariff on a condition if the financial institutions will finance them based on this tariff then they will take it otherwise they will renegotiate. A number of international lenders were approached and very few showed interest but not at the tariff suggested by the power purchaser. As a result they went back into negotiations and renegotiations with the power purchaser till the power purchaser reinstated the original US 4.7 cents per unit in 2004. Interviewee 13 stated that *"if the original tariff was requested in 1995 and was not enough to finance the project after 9 years' escalation. Again the company faced problems in getting finance".* In 2002 the new policy was announced according to which there were more concessions available and was more lucrative than the old policy, making available the regulatory framework. Interviewee 10 reported that *"after discussing it with all the stakeholders we implemented and allowed the mechanism available in the 2002 policy for this project. So in this way ultimately it was negotiated at 8.5 cents per unit (kWh) finally after 9 years; with this level of tariff the project was also finally financed by the lenders"*. This was the main hurdle along the tenure of the development of this project also there were a number of things related to the laws as to which law is impacting and how it is impacting; for example a tax incentive and tax holiday was given in the 1995 policy but the concerned tax department could not implement or regularize it as the law was not in concurrence with the policy. In order to amend and translate the law and formalize the issuance of Statutory Regulation Order (SRO), a lot of time was spent. According to Interviewee 11, there

were some items in the policy for which the law needed to be changed otherwise it could not be implemented. Again due to the location of the project [it is located in a state of Pakistan which has its own parliament and is independent in making its own laws along with being an internationally disputed territory] a backup arrangement had to be made and link had to be made with the GoP and the state government policies to be on equal footing and safeguard the interests of all the stakeholders involved. According to Interviewee 12 *"these hurdles took a lot of time in development of this particular project".* Interviewee 14 reported that the project would cost $100 million if completed in 2004 as compared to $233 million in 2009. Table 4.3 summarizes the impacts of severity of the different major risks in hydropower sector.

Table 4. 3 Summary of impacts of risk in Hydropower Sector

	Impacts of Risks		
	Financial Risk	**Political Risk**	**Management Risk**
Project 4	• Low capacity of financial institutions • Delays in financial close	• Lack of transparency and competition • Issues with dealing with provinces	• Incosistant policies • Changing tariff

4.6 Risk Allocation in Hydropower Sector

The interviewees stated that because most of the projects are internationally financed, and banks and other financial institutions are risk averse so they safeguard their vulnerabilities. Organization 4 has a mechanism of three agreements: one is the implementation agreement called IA, then power purchase agreement (PPA) and

finally the water use agreement (WUA) in case of hydropower project. IA is from the GoP and Organization 4, the PPA is from the power purchaser and WUA is from the provincial government because water is ownership of the provinces. Interviewee 10 told about the WUA that *"there is a risk that when a project is constructed on a certain stream, provinces have the right on water and can divert or pond the water from this stream to another before it reaches the power house. So the provinces provide full cover to this risk as this a major risk to the company and the project, and can severely affect the performance of the project and its generation capability".* The Interviewee 10 also reported that the provincial governments are entitled to make new laws but in WUA they provide surety that they will make no law in the future that will adversely affect the project and if it is necessary to pass a law that affects the project they will compensate for it.

Interviewee 12 gave an example that *"if the transmission line is down which is the responsibility of the power purchaser then the power generated by the project cannot be utilized. This risk is covered by the power purchaser; if such is the instance they will in anyway purchase the power from the project and the project is safeguarded".* The second example given by Interviewee 10 is *"if the demand is less but the project is capable and ready to generate, then the power purchaser safeguards the project from this risk and takes it on itself and the units for that period which are deemed to be generated are compensated by the power purchaser in any case"*.

All the interviewees stated that supreme power lies with the GoP and there certain laws, so in the implementation agreement GoP gives sovereign guarantee on

behalf of the President of Pakistan for not making any law that will adversely affect the project.

The Interviewee 10 reported that the procurement process of Project 4 was based on the first come first serve method and in this method there was no competition. At that point in time the major consideration was the VfM because investing in hydropower projects is a costly business. Although it was first come first serve basis the evaluation process was entirely transparent due to an evaluation committee of all the stakeholders who evaluated the project in a transparent manner. It was based on collective wisdom but it was not competitive.

Chapter 5

CONCLUSIONS AND RECOMMENDATIONS

In this chapter conclusions will be drawn to the exploratory study by commencing with the meticulous discussion about the findings presented in Chapter 4 in order to meet the objectives of this research portrayed in Chapter 1. The chapter also presents and discusses the contribution to the body of knowledge as a product of this research; the recommendations proposed by this research and a discussion on the limitations.

5.1 Review of Research Objectives

The objectives of the research study were:

i. To explore the major risks and opportunities related to PPP infrastructure projects of Pakistan.

ii. To investigate the impacts/severity of the risks in specific sectors from the perspective of major stakeholders.

iii. To recommend a framework to improve PPP project model in Pakistan that can facilitate the adoption and successful implementation of PPPs.

The 1st objective was achieved through getting the perception of experts of PPP pertaining to PPP risk factors across the world and especially PPP atmosphere of Pakistan. For this, 19 face to face interviews were conducted from various professionals belonging to road and hydropower sectors of Pakistan. The 2nd

objective was met by dividing the interviewees as public and private sector representatives to find out the actual risk and opportunities experienced during the procurement and implementation phases of case study projects along with the impact/severity confronted due to improper handling of these risks. Finally the 3rd objective was attained by suggesting some useful measures for the successful implementation of PPP projects in Pakistan.

5.2 Conclusion

The major findings of the study are:

PPP Road Sector

a. The risks to PPP road sector project may be subjected to numeral variables such as the nature of project scope, location of the project, and the type of PPP procurement implemented. So, multiple PPP risk factors are revealed from the different perspectives (e.g. public & private) and can broadly be categorized as financial, political and management risks.

b. Due to the political instability and poor law and order situation the political risk is the most severe by the interviewees. Because of this risk many international and national private parties are reluctant to take interest in PPP road sector. On the other hand, as a result of low competition in some projects in areas of security risk, sometime public party goes for negotiated bidding directly instead of competitive bidding which yields extra financial benefits to the private party. This was also observed that the political factors also affect the investor's perception.

c. There are no construction delays experienced in PPP projects, this is mainly due to the continuous availability of finance.

d. Failure to appropriate allocation of demand risk is a major issue which lead to claim rising and disputes among public and private parties.

PPP Hydropower Sector

e. In Pakistan the regulatory requirement as per policy states that BOOT is used in the organization for hydropower projects since they are of strategic nature to Pakistan and have to be transferred to the government. This is the reason the Interviewee 15 reported that hydropower projects are more costly and risky as they involve equity redemption at the end of lease term when transferring the asset.

f. The largest barrier in effective implementation of PPP in power sector is the availability and accessibility of finances owing to the fact that power infrastructure is highly capital intensive. Hence the financial risk is dominating in PPP power sector followed by the political and management risks in hydropower sector in Pakistan.

g. The management risk is the most severe in power sector because of the changing policies and tariff followed by the financial and political risks

5.3 Recommendations

These are some suggested measures which are fundamental for the beneficial outcomes of PPP projects in Pakistan:

a. Public sector assistance and support is a key variable for PPPs.
b. Government is a prime responsible for defining the clear and achievable scope.
c. PPP contracts must ensure the technical viabilities and financial feasibilities prior to the execution of the project.
d. PPP deals must incorporate risk sharing mechanism, attainable VfM, inexpensive and guaranteed paying back capacity of public sector.
e. A comprehensive policy framework is mandatory that will (i) specify and prioritize the scope and mechanism for the PPP; (ii) include a strategy to check for the market sounding; (iii) Test VfM through precise financial analysis; (iv) drive transparent procurement processes; (v) provide sovereign guarantees; and (vi) develop mechanism for efficient risk sharing.
f. A comprehensive legal framework is also a fundamental requirement that will ensure transparency, specify powers of public and private parties, reduce the cost and time of procurement process and incorporate the standard operating procedures for disputes resolutions.
g. Capacity of public sector must be enhanced in terms of procurement, technical and financial evaluation capabilities by

ensuring the professional management through adding proficient experts of PPP and obtaining the pertinent expert advices

5.4 Directions for Future Research

a. It is recommended that future research studies may be limited to any one of the category of risk factors i.e. political, financial, management, etc. to understand their effects in a more deliberate way.
b. A study may be conducted to quantify the impact of different risks on PPP projects.
c. A comparative study may also be carried out to evaluate different risks on a PPP project and a traditionally procured project.
d. Future research may be carried out on the development of easy, reliable and workable risk assessment and allocation model for PPP projects at various locations in Pakistan.

5.5 Summary

This chapter has provided a conclusion to the research by reviewing the individual research objectives identified in Chapter 1. Then summaries of the research findings from PPP road and hydropower sectors are presented separately. Lastly the chapter has presented recommendations that have come out of this research and also provided the routes for future research.

REFERENCES

Abdel-Aziz, A. (2007). "Successful Delivery of Public-Private Partnerships for Infrastructure Development." Journal of Construction Engineering and Management **133**(12): 918-931.

Abdul-Aziz, A.-R. (2001). "Unraveling of BOT scheme: Malaysia's Indah water konsortium." Journal of Construction Engineering and Management **127**(6): 457-460.

Abrar, O. (2007). Lakpass tunnel completed ahead of schedule. The News. ISLAMABAD.

Adam, C. (1996). "Embedded options in infrastructure projects." Journal of Applied Finance and Investment **1**(1): 33-36.

Ahadzi, M. and G. Bowles (2004). "Public–private partnerships and contract negotiations: an empirical study." Construction Management and Economics **22**(9): 967-978.

Akintoye, A., C. Hardcastle, et al. (2003). "Achieving best value in private finance initiative project procurement." Construction Management and Economics **21**(5): 461-470.

Alfen, H. W., S. N. Kalidindi, et al. (2009). "Public-Private Partnership in infrastructure development: Case studies from Asia and Europe."

Anastasopoulos, P. C., S. Labi, et al. (2009). "Analyzing the duration and prolongation of performance-based contracts through hazard-based duration and zero-inflated random parameters Poisson models." Transportation Research Record: Journal of the Transportation Research Board **2136**(1): 11-19.

Argy, F., M. Lindfield, et al. (1999). "Infrastructure and economic development." CEDA Information Paper No **60**.

Baxter, P. and S. Jack (2008). "Qualitative case study methodology: Study design and implementation for novice researchers." The qualitative report **13**(4): 544-559.

Bing, L., A. Akintoye, et al. (2005). "The allocation of risk in PPP/PFI construction projects in the UK." International Journal of Project Management **23**(1): 25-35.

Bing, L. and R. L. Tiong (1999). "Risk management model for international construction joint ventures." Journal of Construction Engineering and Management **125**(5): 377-384.

Broome, J. and J. Perry (2002). "How practitioners set share fractions in target cost contracts." International Journal of Project Management **20**(1): 59-66.

Chan, A. P., J. F. Yeung, et al. (2010). "Empirical study of risk assessment and allocation of public-private partnership projects in China." Journal of Management in Engineering **27**(3): 136-148.

de Weerd-Nederhof, P. C. (2001). "Qualitative case study research. The case of a PhD research project on organising and managing new product development systems." Management Decision **39**(7): 513-538.

Devapriya, K. (2006). "Governance issues in financing of public–private partnership organisations in network infrastructure industries." International Journal of Project Management **24**(7): 557-565.

DiCicco-Bloom, B. and B. F. Crabtree (2006). "The qualitative research interview." Medical education **40**(4): 314-321.

Fair, D. E. and R. J. Raymond (1994). The competitiveness of financial institutions and centres in Europe, Springer.

Farooq, T. (2012). Assessment And Allocation Of Risk Factors Associated With Public Private Partnership Constructional Projects In Pakistan. Master of Science, National University of Sciences and Technology (NUST) Islamabad, Pakistan.

Golafshani, N. (2003). "Understanding reliability and validity in qualitative research." The qualitative report **8**(4): 597-607.

Grimsey, D. and M. Lewis (2004). Public private partnerships: The worldwide revolution in infrastructure provision and project finance, Edward Elgar Publishing.

Grimsey, D. and M. K. Lewis (2002). "Evaluating the risks of public private partnerships for infrastructure projects." International Journal of Project Management **20**(2): 107-118.

Gupta, J. P. and A. K. Sravat (1998). "Development and project financing of private power projects in developing countries: a case study of India." International Journal of Project Management **16**(2): 99-105.

Harris, S. (2004). "Public private partnerships: delivering better infrastructure services." Recouping Infrastructure Investment in Latin America and the Caribbean. Washington, DC: BID.

Hayford, O. and C. U. Partner (2006). "Successfully allocating risk and negotiating a PPP Contract." Proceedings of 6th Annual National Public Private Partnerships Summit: Which Way Now for Australia's PPP Market: 16-17.

Henjewele, C., M. Sun, et al. (2011). "Critical parameters influencing value for money variations in PFI projects in the healthcare and transport sectors." Construction Management and Economics **29**(8): 825-839.

Herbsman, Z. J. and C. R. Glagola (1998). "Lane rental-innovative way to reduce road construction time." Journal of Construction Engineering and Management **124**(5): 411-417.

Hoepfl, M. C. (1997). "Choosing qualitative research: A primer for technology education researchers."

IPDF (2010). "Private Participation in Infrastructure for Better Public Services. Approved by the Economic Coordination Committee (ECC) of the Cabinet January 26, 2010."

Jamal, A. (2012). PROSPECTS OF BUILD OPERATE TRANSFER (BOT) PROJECT DELIVERY METHOD FOR ROAD INFRASTRUCTURE: A CASE STUDY KARACHI-HYDERABAD MOTORWAY M-9. Master of Science, National University of Sciences & Technology, Islamabad.

Jefferies, M. and W. McGeorge (2009). "Using public-private partnerships (PPPs) to procure social infrastructure in Australia." Engineering, Construction and Architectural Management **16**(5): 415-437.

Jin, X.-H. (2009). "Determinants of efficient risk allocation in privately financed public infrastructure projects in Australia." Journal of Construction Engineering and Management **136**(2): 138-150.

Khan, A., M. Sharif, et al. (2012). "CONSTRAINTS IN ADOPTION OF BUILD OPERATE AND TRANSFER (BOT) PROJECTS IN DEVELOPING

COUNTRIES-FACT FINDINGS FROM PAKISTAN." Pakistan Journal of Science **64**(3).

Khan, A. H., M. Jamil, et al. (2008). The trend of build operate and transfer (BOT) projects in Pakistan. Proc. of 1st Int. Conf. of Const. in Dev. Countries.

Koch, C. and M. Buser (2006). "Emerging metagovernance as an institutional framework for public private partnership networks in Denmark." International Journal of Project Management **24**(7): 548-556.

Kvale, S. (1996). InterViews. An introduction to qualitative research writing, Sage Publications, Thousand Oaks, CA.

Kwak, Y. H., Y. Chih, et al. (2009). "Towards a comprehensive understanding of public private partnerships for infrastructure development." California Management Review **51**(2): 51-78.

Levy, S. M. (1996). Build, operate, transfer: paving the way for tomorrow's infrastructure, John Wiley & Sons.

Linder, S. H. (1999). "Coming to Terms With the Public-Private Partnership A Grammar of Multiple Meanings." American behavioral scientist **43**(1): 35-51.

Miles, M. B. and A. M. Huberman (1994). Qualitative data analysis: An expanded sourcebook, Sage.

Miller, J. B. (2002). Case studies in infrastructure delivery, Springer Science & Business Media.

Morledge, R. and K. Owen (1999). "Developing a methodological approach to the identification of factors critical to success in privatised infrastructure projects in the UK." Profitable Partnering in Construction Procurement: 487-498.

Mubin, S. and A. Ghaffar (2008). "BOT Contracts: Applicability in Pakistan for Infrastructure development." Pakistan Journal of Engineering & Applied Science **3**: 33-46.

Nisar, T. M. (2007). "Risk management in public–private partnership contracts." Public Organization Review **7**(1): 1-19.

Noor, M. A. (2011). Investigating the role of procurement practices in effective implementation of infrastructure projects in a developing country: a case of Pakistan, RMIT University Australia.

Noor, M. A., M. M. Khalfan, et al. (2012). "Exploring Public Sector Procurement of Infrastructure Projects in Pakistan."

Noor, M. A., M. M. Khalfan, et al. (2012). "Methods used to procure infrastructure projects in Pakistan: an overview." International Journal of Procurement Management **5**(6): 733-752.

Patton, E. and S. H. Appelbaum (2003). "The case for case studies in management research." Management Research News **26**(5): 60-71.

Patton, M. Q. (2005). Qualitative research, Wiley Online Library.

Pesnani, R. and I. Ahmad (2010). Quarterly Infrastructure Finance Review.

Raisbeck, P., C. Duffield, et al. (2010). "Comparative performance of PPPs and traditional procurement in Australia." Construction Management and Economics **28**(4): 345-359.

Rockart, J. F. (1982). The changing role of the information systems executive: a critical success factors perspective, Massachusetts Institute of Technology.

Rosenau, P. V. (2000). Public-private policy partnerships, MIT Press.

Sachs, T., R. Tiong, et al. (2007). "Analysis of political risks and opportunities in public private partnerships (PPP) in China and selected Asian countries: survey results." Chinese Management Studies **1**(2): 126-148.

Schaufelberger, J. E. and I. Wipadapisut (2003). "Alternate financing strategies for build-operate-transfer projects." Journal of Construction Engineering and Management **129**(2): 205-213.

Shen, L.-Y., A. Platten, et al. (2006). "Role of public private partnerships to manage risks in public sector projects in Hong Kong." International Journal of Project Management **24**(7): 587-594.

Sheskin, D. J. (2003). Handbook of parametric and nonparametric statistical procedures, crc Press.

Strauss, A. and J. M. Corbin (1990). Basics of qualitative research: Grounded theory procedures and techniques, Sage Publications, Inc.

Tam, C. and A. W. Leung (1999). "Risk management of BOT projects in southeast Asian countries." Profitable Partnering in Construction Procurement: 499-507.

Tang, L., Q. Shen, et al. (2010). "A review of studies on Public–Private Partnership projects in the construction industry." International Journal of Project Management **28**(7): 683-694.

Taylor-Powell, E. and M. Renner (2003). Analyzing qualitative data, University of Wisconsin--Extension, Cooperative Extension.

Teisman, G. R. and E.-H. Klijn (2000). "10 Public-private partnerships in the European Union." Public-Private Partnerships: theory and practice in international perspective: 165.

Thomas, A., S. N. Kalidindi, et al. (2003). "Risk perception analysis of BOT road project participants in India." Construction Management and Economics **21**(4): 393-407.

Tiong, R. L., K.-T. Yeo, et al. (1992). "Critical success factors in winning BOT contracts." Journal of Construction Engineering and Management **118**(2): 217-228.

Treasury, H. and I. UK (2010). "Infrastructure cost review: main report." HM Treasure and Infrastructure UK, London, UK.

Wilson, J. (2009). Essentials of business research: A guide to doing your research project, Sage.

Xenidis, Y. and D. Angelides (2005). "The financial risks in build-operate-transfer projects." Construction Management and Economics **23**(4): 431-441.

Xu, Y., A. P. Chan, et al. (2010). "Developing a fuzzy risk allocation model for PPP projects in China." Journal of Construction Engineering and Management **136**(8): 894-903.

Ye, S. and R. Tiong (2000). "Government support and risk-return trade-off in China's BOT power projects." Engineering Construction and Architectural Management **7**(4): 412-422.

Yescombe, E. R. (2011). Public-private partnerships: principles of policy and finance, Butterworth-Heinemann.

Yin, R. K. (2013). Case study research: Design and methods, Sage publications.

Yuan, J., A. Y. Zeng, et al. (2009). "Selection of performance objectives and key performance indicators in public–private partnership projects to achieve value for money." Construction Management and Economics **27**(3): 253-270.

Zhang, X. (2004). "Improving concessionaire selection protocols in public/private partnered infrastructure projects." Journal of Construction Engineering and Management **130**(5): 670-679.

Zhang, X. (2005). "Criteria for selecting the private-sector partner in public–private partnerships." Journal of Construction Engineering and Management **131**(6): 631-644.

Zhang, X. (2005). "Critical success factors for public–private partnerships in infrastructure development." Journal of Construction Engineering and Management **131**(1): 3-14.

Zietlow, G. (2005). "Cutting costs and improving quality through performance-based road management and maintenance contracts-the Latin American and OECD experiences." Senior Road Executives Programme, Restructuring Road Management, German Development Cooperation, Birmingham.

Appendix 1

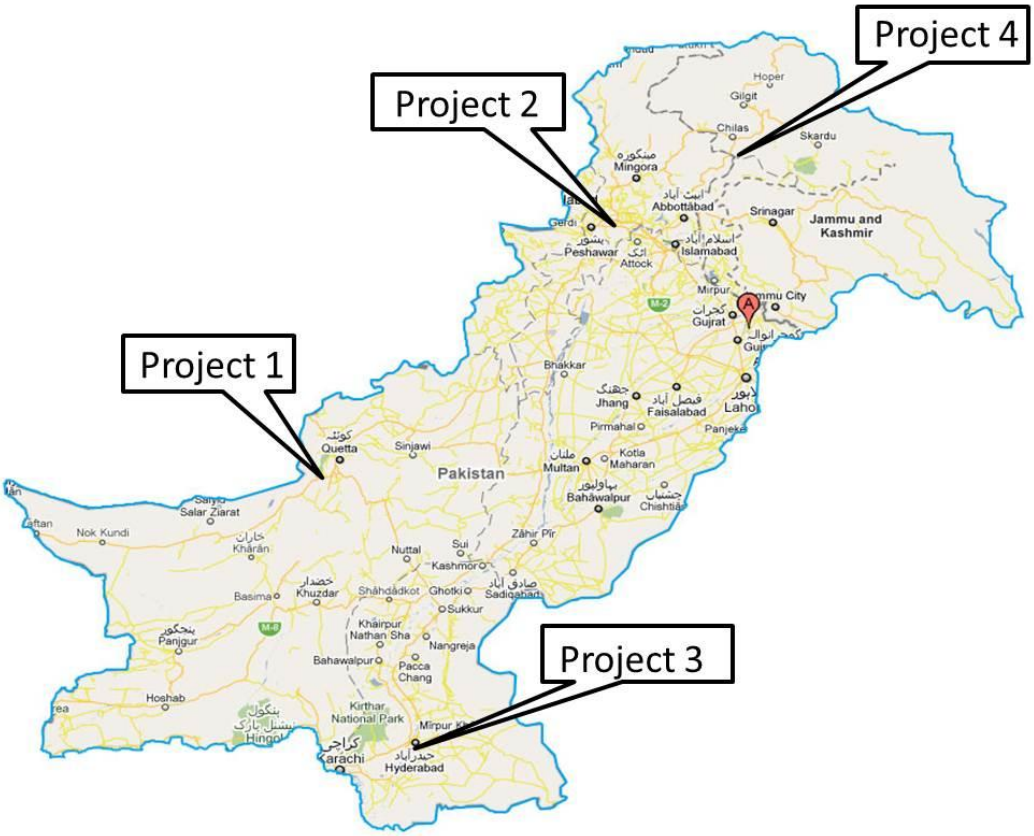

Figure 1 Geographical Locations of Case Study Projects

Case Study Projects of PPP Road Sector

Project 1: 180m Lakpass Tunnel (N-25) on BOT Basis

This is a tunnel Project which comprises of construction of a 180-metre long tunnel and 5 kilometers road. Tunnel is facilitating the public, travelling on the national highway, by improving the steep gradient and eliminating the curves and reducing travel time. It has also increased the trade activities inside the country and also with the Central Asian Republics and providing better business opportunities to the locals of the area.

- **Project Details**

The project consisted of construction of a tunnel that is 180 meters in length it also included construction of access roads (5 Km) to Tunnel and improvement of existing road, construction of interchange, construction of two grade-separated crossing of the two carriageways, construction of toll plaza and weigh station. The total cost of the project is Rs.1098 Million and the project has been procured through Public Private Partnership under BOT basis. The project has been completed and is under operation by the operator.

Project 2: Establishment of Two Main Service Areas at M-1 on BOT Basis

Motorway (M-1) is a 6-lane divided, 154 kilometers long and access controlled facility. The existing alignment had a dearth of service areas and the situation was posing discomfort and hence shunning off potential traffic. So National Highway Authority (NHA) decided to establish two main service areas. Keeping in view the financial constraints and pursuant to policy of the GoP, the NHA planned to implement the project through Public-Private Partnership under Build-Operate-Transfer (BOT).

- **Project Details**

The Concessionaire is required to Finance, Construct, Manage and operate the facilities compatible with the other service areas along the national motorways but not limited to the following:

- Restaurants and Food Courts
- Toilets

- CNG/LPG Filling Stations with Tuck Shop
- Diesel/Petrol Filling Stations with Tuck Shop
- Tire Shop and Mini Workshop
- Medical Clinic
- Amusement and Children Park
- Advertisement Boards, Gantries etc.
- Mosque
- Boating Area/Fishing Deck
- Parking Area
- Truckers Workshop
- Internal Roads, Sewerage, Water Supply and Electrification

The salient features of the concession are as follows:

Concession Term:	15 Years
Project Cost:	PRs. 689,390,000
Debt/Equity Ratio:	70:30
Internal Rate of Return:	19-20%
Payback Period:	6-7 Years
Financial Close Period:	5+1 Months
Construction Period:	12 Months
GOP Financial Support:	None
GOP Guarantee:	None

The project is in operational stages.

Project 3: Conversion of Existing 4-Lane Highway (N-5) into 6-Lane Karachi – Hyderabad Motorway (M-9)

The Karachi-Hyderabad section of N-5 (popularly known as super highway) connects the port city of Karachi to the North of Pakistan. This section of the highway is amongst the most densely trafficked in the entire country, the existing highway (N-5) is serving a traffic volume of over 20,000 VPD (Vehicles per Day) with over 60% of truck traffic. The average traffic growth rate of this section is about 5% annually. The route is also the shortest possible distance between the two cities i.e. Karachi and Hyderabad and feeds into the main North – South Links i.e. National Highway N-55 (Indus Highway) and the National Highway N-5 (Grand **9);**

The Karachi-Hyderabad section was constructed as a part of the First Highway Project with the assistance of World Bank during 1964-1968 and dualizied in 1991as part of the fourth IBRD (International Bank for Reconstruction and Development) Highway project. Toll is being collected from Highway users by the NHA.

Table 1: Comparison of Project Salient

Sr No	Parameters	Standard Construction Company (2006)	Binapuri Holdings (2012)
1	Length of Road	136 Km	134.95 Km
2	Length of Service Road	130 Km	71.05 Km
3	Proposed Lane	6 Nos	6 Nos
4	Weigh Stations	3 No existing, RBOC will construct upto 2	7 No
5	Pedestrian Underpass	10 No	10 Nos
6	Main Service Areas	2	2
7	No of Interchanges	11	7
8	No of Toll Plazas	24	16
9	Likely Cost	7 Billion Rs	18.26 Billion Rs
10	Bid Security	170 M Rs	170 M Rs
11	Construction Period	24 Months of Construction along Financial Close	36 Months of Construction along Financial Close
12	Concession Period Including Construction Period	25 Yrs (Max)	28 Years (Max)
13	Type of Motorway	Controlled accessed	Controlled accessed
14	Financial Close Period	180 days after signing of concession agreement	180 days after signing of concession agreement
15	Toll Escalation	10% after every 3 years	10% every year
16	Equity : Debt	30:70	30:70
17	NHA Revenue Sharing	20% after Loan Repayment	5% after Payment of Cost

Source: NHA (2009) and http://en.wikipedia.org/wiki/Super_Highway

Case Study Project of PPP Hydropower Sector

Project 4: 84MW New Bong Escape Hydropower Project on BOOT Basis

The Project is to provide power at a competitive tariff, and will promote renewable energy particularly helping to reverse the generally declining share of hydropower generation in Pakistan's generation mix. The project is the first private sector hydropower project in Pakistan on build-own-operate and transfer (BOOT) basis whereby the complex would be transferred to the Government at the cost of Rs.1 only at the end of a 25-year term. The government expects that it will set the precedence and template for private sector development in the hydropower sector.

- **Project Details**

The Project involves construction of a run-of-the-river, low head, 84MW hydropower generating complex. It is located at the escape channel, some 7.5 km downstream of the existing Mangla dam. It will be fed by water originating from the reservoir of the dam, which is released, through the powerhouse (1,000 MW), into the canal. There is no new reservoir or other water storage envisaged for the Project. Total Project cost is US$ 216 million to be financed at a debt equity ratio 75/25; financing for US$ 121 million is in place through consortia comprising of the international lending institutions as well as local Pakistani commercial banks. The project is in operation phase.