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Study on Managing Public-Private Partnerships (PPPs)

Case of India

創価大学大学院

経済学研究科 経済学専攻

PHUYAL MOHAN

Table of Contents

ACKNOWLEDGEMENTS.....	i
LIST OF TABLES and TEXT BOXES.....	ii
LIST OF FIGURES.....	v
ABBREVIATIONS.....	vi
GLOSSARY OF TERMS.....	xi
PREFACE	xiii

CHAPTER 1: INTRODUCTION

1.0 Chapter Introduction	1
1.1 Personal Perspective	1
1.2 Literature Perspective	2
1.3 Research Questions and Objectives	4
1.4 Research Methodology.....	5
1.5 Basic Understandings of India.....	5
1.5.1 Historical and Political Background.....	5
1.5.2 Social and Cultural Background.....	6
1.5.3 Indian Economy.....	7
1.5.4 Economic Model.....	7
1.6 The Importance of Studying India	8
1.7 Research Contributions	9
1.8 Significance of the Research	9
1.9 Limitation of the Study	10
1.10 Structure of the Thesis	10

CHAPTER 2: LITERATURE REVIEW

2.0 Chapter Introduction.....	11
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2.1 Conceptual definitions of Public-Private Partnerships	12
2.1.1 Defining Public-Private Partnerships	12
2.1.2 Public Sector and its Characteristics	17
2.1.3 Private Sector and its Characteristics	17
2.1.4 Partnerships and its Characteristics	19
2.1.5 Reasons for partnering on PPPs	21
2.1.6 Structuring of PPPs	24
2.1.7 Process for PPPs formation	29
2.1.8 Functional organization of PPPs	29
2.1.9 Three Levels of PPPs Fields	32
2.2 PPPs Models	36
2.3 PPPs forms and Modalities	40
2.4 Major Determinants for PPPs	43
2.4.1 Government Fiscal Constrains	43
2.4.2 Market Conditions	44
2.4.3 Macro-Economic Conditions	45
2.4.4 Sustainable Development	45
2.4.5 Private Finance Initiative	46
2.4.6 Privatization	46
2.5 Public-Private Partnership: Principles and Key Characteristics	47
2.5.1 Principle of PPPs	47
2.5.2 General Characteristics of PPPs	49
2.5.3 Comparing PPPs enabling fields	51
2.5.4 Attractive Factors for PPPs	52
2.5.5 Negative factors for PPPs	56
2.5.6 Risk sharing in PPPs	58
2.6 An International experience on PPPs	60
2.6.1 Global Scenario on PPPs	61
2.6.2 PPPs Developing Scenario by countries	64
2.6.3 PPPs in Europe	68

2.6.4 PPPs in Asia	68
2.6.5 PPPs in SAARC countries	69
2.7 PPPs in developing countries	70
2.8 Literature on Infrastructure	72
2.9 Characteristics of Infrastructure	75
2.10 Key dimensions of Infrastructure	76
2.10.1 Infrastructure and Economic Development	76
2.10.2 Infrastructure and PPPs Governance	78
2.10.3 Stakeholder theory and Infrastructure PPPs	78
2.11 Rationale of Usage of PPPs in Infrastructure	80
2.12 PPPs pitfalls in Infrastructure sector	82
2.13 Summary	84

CHAPTER 3: PHILOSOPHY & METHODOLOGY

3.0 Chapter Introduction	85
3.1 Research Paradigm	85
3.1.1 Positivism	86
3.1.2 Post-positivism/Critical realism	86
3.1.3 Interpretivist	87
3.2 Data Collection method	88
3.2.1 Primary Data	88
3.2.2 Secondary Data	88
3.3 Research Approach.....	89
3.3.1 Ontological Positions	89
3.3.2 Epistemological Positions	90
3.3.3 Approach to Social Theory	91
3.3.4 Research Approach Summary	93
3.4 Methodological Choices and Research Strategy	94
3.4.1 Research Strategies	94
3.4.2 Qualitative Approach	97

3.5 Geographical Domain of the Research	98
3.6 Case Study Design	98
3.7 Summary	100

CHAPTER 4: PPPs IN INDIA

4.0 Chapter Introduction.....	101
4.1 Analyzing the Policy Background	102
4.1.1 Role of Private Sectors in Economic Development	103
4.1.2 Financial Sector Reforms and Characteristics	103
4.1.3 Monetary Policy	105
4.1.4 Bank Factors	106
4.1.5 Public Sector Reform in India	108
4.2 Infrastructure Financing in India	108
4.2.1 External Sources of Financing	109
4.2.1.1 FDI's Role in Infrastructure	109
4.2.1.2 Debt from International Financial Agencies	114
4.2.1.3 Public and Private Investment	115
4.2.2 Internal Sources of Financing	116
4.2.2.1 Financing Methods	118
4.3 Infrastructure Deficit	122
4.3.1 Infrastructure Deficit 11th Plan (2007-12)	122
4.3.2 Infrastructure Deficit 12th Plan (2012-17)	122
4.4 PPPs Determining Indicators	123
4.5 Analyzing PPPs Infrastructure in India	124
4.5.1 Academic Research of Indian PPPs	125
4.5.2 Development of Relevant Policies	127
4.5.3 Current Status of PPPs	128
4.5.4 Institutional Framework and Characteristics	134
4.5.5 Governance System for PPPs	139
4.6 State-wise Institutional Framework	144

4.7 Regulatory Framework	147
4.8 National Policies on Infrastructure PPPs	149
4.8.1 Development of NITI Aayog	150
4.8.2 PPPs Committees and Institutions	151
4.9 Analyzing PPPs Process	155
4.9.1 PPPs Designing	155
4.9.2 Bidder Prequalification	156
4.9.3 Procuring Model Documents	158
4.9.4 Model Concession Agreement and Characteristics	160
4.9.5 Contract Management	162
4.10 Summary	164

CHAPTER 5: CASE STUDY

5.0 Chapter Introduction	165
5.1 Analyzing PPPs in Roads and Highways	165
5.1.1 Scenario of Roads and Highways	166
5.1.1.1 Institutional Framework for Roads and Highways	166
5.1.1.2 Political Process	170
5.1.1.3 Financing on Roads and Highways	171
5.2 Roads and Highways Development Phases	173
5.3 Applied PPPs Models in Roads and Highways	179
5.4 Case of Delhi-Jaipur Highway	183
5.5 PPPs in Airport Infrastructure	193
5.5.1 Introduction of Indian Airports	193
5.5.2 PPPs Airports in India	194
5.5.3 Analyzing Aviation Sector-Regulatory Environment	195
5.6 Case of Delhi International Airport	197
5.6.1 PPPs in DIAL	199
5.6.2 Issues between DIAL and AERA.....	203
5.7 Summary	206

CHAPTER 6: Conclusion

6.0 Chapter Introduction208

6.1 Findings of the Study.....209

6.2 Suggestions for Policy Implications211

REFERENCES201

APPENDIX239

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LIST OF TABLES AND TEXT BOXES	Page
Table 2.1: Several Definitions on PPPs	15
Table 2.2: PPPs defined by various Organizations	16
Table 2.3: Characteristics of Public and Private Sectors	18
Table 2.4: Variations between Public and Private Sectors	18
Table 2.5: Reasons for Undertaking PPPs	19
Table 2.6: Three “E” Point of View	22
Table 2.7: Conceptual Model of Partnering	23
Table 2.8: Outline of PPPs Tendering Process	29
Table 2.9: Models of PPPs	37
Table 2.10: PPPs Models and Characteristics	39
Table 2.11: PPPs Policies in Global Scenario.....	62
Table 2.12: Characteristics of Market Maturity Curve	63
Table 2.13: Applied PPPs Models	67
Table 2.14: PPPs Enabling Organizations in SAARC	69
Table 2.15: Top Five Countries Investment Commitments in H1 2020	71
Table 2.16: Infrastructure Service Sector	73
Table 2.17: Infrastructure Life Expectancy	74
Table 2.18: Dimensions of Partnerships	79
Table 3.1: The Current Study’s Interpretive Framework	87
Table 3.2: Author’s Research Approach	93
Table 3.3: Variations of Quantitative and Qualitative Research	96
Table 4.1: India’s Financial Regulatory Organizations	104
Table 4.2: Ceiling Under the Automatic Route	111
Table 4.3: Financial Year-Wise FDI Equity Inflows	111
Table 4.4: Fiscal Years Exchange Rates	112
Table 4.5: Scenario of Sector-Wise FDI Inflows	113
Table 4.6: Chief Stakeholders in Infrastructure PPP Financing	117
Table 4.7: Infrastructure Deficit Current Scenario	123
Table 4.8: Definitions of Six Dimensions of Governance Concepts	123

Table 4.9: Governance Indicator of India	124
Table 4.10: Development of Literature on Indian PPPs	126
Table 4.11: Regional Distribution of PPPs Projects	130
Table 4.12: Sector-Wise Distribution	130
Table 4.13: List of Major Companies in Indian PPPs.....	131
Table 4.14: Institutional Framework to Facilitate PPPs	135
Table 4.15: Institutional Frameworks for various states	145
Table 4.16: State-Wise PPP Projects	146
Table 4.17: Regulatory Framework on Various Sectors	147
Table 4.18: Characteristics of Regulatory Governance	149
Table 4.19: Timeline of Important Policies	153
Table 4.20: Illustrative Schedule for Bidding Process in India	157
Table 4.21: Parameters and Descriptions	162
Table 4.22: Range of Service Delivery.....	163
Table 5.1: Characteristics of Several Institutions	168
Table 5.2: Public and Private Sectors Investments in Road Sectors	173
Table 5.3: The NHAI Development Phases	174
Table 5.4: Investment Scenario in the Road Sector	176
Table 5.5: Applied PPP Models for Roads and Highways	179
Table 5.6: Indicative Allocation of Risks in Indian Roads	180
Table 5.7: GoI Measures for PPPs Investment in Roads	181
Table 5.8: Current Institutional Framework	182
Table 5.9: NH-8 Delhi Mumbai National Highway	184
Table 5.10: Delhi-Jaipur Highway Project Details	188
Table 5.11: FDI in Civil Aviation Sector in India	193
Table 5.12: Scenario of PPP Airports	194
Table 5.13: Delhi International Airport Important Timeline	198
Table 5.14: Bidding for the Delhi Airport RFP Stage	199
Table 5.15: Airport Consortia Original Evaluation Scores	200
Table 5.16: Options for Modernizing Delhi International Airport	201

Table 5.17: Issues between AERA and DIAL	203
Table 5.18: Total Project Cost	206
List of Figures	Page
Figure 2.1: Common Structure on PPPs	14
Figure 2.2: Framework for Analyzing Partnership	21
Figure 2.3: Typical PPP Structure	27
Figure 2.4: PPPs Project Cycle Phases and Functions	31
Figure 2.5: Nature of Partnership Matrix	41
Figure 2.6: Per-Capita Income and Infrastructure Demand	44
Figure 2.7: Main Principles of PPPs	48
Figure 2.8: Market Maturity Curve	66
Figure 2.9: Global Investment Trends in PPIs	71
Figure 2.10: Defining Infrastructure	74
Figure 3.1: Research Paradigm	86
Figure 3.2: Key Epistemological Positions	90
Figure 3.3: The Interrelationship Between Blocks of Research	91
Figure 3.4: Deductive and Inductive Nature of Research	93
Figure 3.5: The Theoretical Framework of the Study	95
Figure 4.1: Structure of the Indian Banking Sector	107
Figure 4.2: FDI Inflows Compared to 2019-2020	113
Figure 4.3: Project Finance Contractual Structures	120
Figure 4.4: PPP Policy Practicing Scenario in India	128
Figure 4.5: Current Status of Indian PPPs	129
Figure 4.6: PPPs in Various Sectors	132
Figure 4.7: Key Stage of PPPs Transaction in India	156
Figure 5.1: Institutional Set-Up for Road and Highways	167
Figure 5.2: Highway Construction in India	175
Figure 5.3: Road Infrastructure by 2021	177
Figure 5.4: Delhi-Mumbai Route NH- 8	185
Figure 5.5: Location Map of Delhi- Jaipur Highway	186

Figure 5.6: PPPs Structure for PCEL187

Figure 5.7: PPPs Structure of DIAL202

Abbreviations

AAI	Airports Authority of India
ACI	Airport Council International
ADB	Asian Development Bank
AERA	Airports Economic Regulatory Authority of India
AEO	Authorized Economic Operator
ASSOCHAM	Associated Chambers of Commerce and Industry of India
BOO	Build, Own, Operate
BOT	Build, Operate, Transfer
BOOT	Build, Operate, Own, Transfer
BRICS	Brazil, Russia, India, China, South- Africa
CA	Concession Agreement
CAG	Comptroller and Auditor General
CCPPP	Canadian Council for Public-Private Partnerships
CCI	Cabinet Committee on Infrastructure
CERC	Central Electricity Regulatory Commission
CIRC	CUTS Institute for Regulation & Competition
CII	Construction Industry Institute
COI	Committee on Infrastructure
CPEC	China Pakistan Economic Corridor
CRGP	Collaboratory for Research on Global Projects
CSO	Central Statistical Organization
DBFO	Design, Build, Finance and Operate
DEA	Department of Economic Affairs
DGCA	Director General Civil Aviation
DIAL	Delhi International Airport Limited

DIPP	Department of Industrial Policy and Promotion
DPPIT	Department for Promotion of Industry and Internal Trade
DPR	Detailed Project Report
EC	Empowered Committee
ECI	Empowered Committee on Infrastructure
EI	Empowered Institution
EIB	European Investment Bank
EMEs	Emerging Market Economy
EOI	Expression of Interest
EPC	Engineering Procurement Contracts
EPC	Engineering Procurement Construction
EU	European Union
FDI	Foreign Direct Investment
FIPB	Foreign Investment Promotion Board
FICCI	Federation of Indian Chambers of Commerce & Industry
FY	Fiscal Year
GCI	Global Competitive Index
GDP	Gross Domestic Product
GIDB	Gujarat Infrastructure Development Board
GMR	Grandhi Mallikarjuna Rao
GoG	Government of Gujarat
GoI	Government of India
GoP	Government of Punjab
HM	Her Majesty
IATA	International Air Transport Association
IBEF	India Brand Equity Foundation
IBRD	International Bank for Reconstruction and Development

ICAO	International Civil Aviation Organization
ICT	Information Communication and Technology
ICRA	Investment Information and Credit Rating Agency
IDB	Inter-American Development Bank
IDFs	Infrastructure Debt Funds
IDFC	Infrastructure Development Finance Company
IEG	Independent Evaluation Group
IFCI	Industrial Finance Corporation of India
IFMR	Institute for Financial Management and Research
IGIA	Indira Gandhi International Airport
IIFCL	India Infrastructure Financing Corporation Limited
IIPDF	India Infrastructure Project Development Fund
IMF	International Monetary Fund
IOR	Inter Organizational Relations
IPPs	Independent Power Producers
IRDA	Insurance Regulatory and Development Authority
IT	Information and Technology
JBIC	Japan Bank for International Cooperation
JICA	Japan International Cooperation Agency
JNNURM	Jawaharlal Nehru National Urban Renewal Mission
LDCs	Less Developed Countries
LOA	Letter of Award
MEDC	Maharashtra Economic Development Council
MPPA	Million Passengers Per Annum
MPC	Monetary Policy Committee
MPT	Major Ports Trusts
MPRDC	Madhya Pradesh Road Development Corporation

NA	Not Available
NGO	Non-governmental Organization
NHAI	National Highway Authority of India
NHDP	National Highway Development Project
NHPC	National Hydroelectric Power Corporation
NITI	National Institution for Transforming India
NMDP	National Maritime Development Program
NPM	New Public Management
NRI	Non-Resident Indian
NTPC	National Thermal Power corporation
OECD	Organization for Economic Co-operation and Development
O&M	Operation and Management
OMDA	Operation Management Development Agreement
OTC	Over the Counter
PCEL	Pink City Expressway Private Limited
PDCOR	Project Development Corporation of Rajasthan
PERDA	Pension Fund Regulatory and Development Authority
PFI	Private Finance Initiative
PIA	Punjab Infrastructure Act
PIDB	Punjab Infrastructure Development Board
PMGSY	Pradhan Mantri Gramin Sadak Yojana
PPI	Private Participation in Infrastructure
PPPs	Public Private Partnerships
PPPAC	Public Private Partnership Appraisal Committee
PPPAU	Public Private Partnership Appraisal Unit
PURA	Providing Urban Services in Rural Areas
PWD	Public Works Department

RBI	Reserve Bank of India
R&D	Research and Development
REITS	Real Estate Investment Trusts
RfP	Request for Proposal
RfQ	Request for Qualification
RIPDF	Rajasthan Infrastructure Project Development Fund
RRB	Regional Rural Banks
RVNL	Rail Vikas Nigam Limited
SAARC	South Asian Association for Regional Countries
SBI	State Bank of India
SDGs	Sustainable Development Goals
SEBI	Securities and Exchange Board of India
SERC	State Electricity Regulatory Commissions
SPV	Special Purpose Vehicle
TDRs	Trading in Transferable Development Rights
TP	Traditional Procurement
TRAI	Telecom Regulatory Authority of India
UK	United Kingdom
UNIDO	United Nations Industrial Development Organization
UN	United Nations
UNDP	United National Development Program
UNESCAP	United Nations Economics and Social Commission for Asia and the Pacific
USA	United States of America
WB	World Bank
WGI	Worldwide Governance Indicators

Glossary of Terms

Accountability:

The ability of the public (state and citizens) to hold to account those exercising public authority over standards and the use of public funds in delivery services.

BOT (Build-Operate-Transfer)

A form of concession usually referring to totally new projects. While procuring a BOT model a private party (or consortium) agrees to finance, construct, operate, and maintain a facility for a specified period and then transfer the facility to a related government authority.

BOOT (Build-Own-Operate)

Varies with BOT model. The contracts accord the right to construct and operate the facility, but the facility is not transferred back to the public sector.

Concession:

Concession-based approaches are one of the oldest forms of public private partnership, and a variety of arrangements are based on the concept of a fixed-term concession, using various combinations of private sector resources to design, construct, finance, renovate, operate and maintain facilities. Ownership of the facility may remain with government or be transferred to the government on completion of the construction or at the end of the concession period.

Service Contract:

The government (public authority) hires a private company or entity to carry out one or more specified tasks or services for a period, typically 1-3 years. The government pays the private partner a predetermined fee for the service, which may be based on a one-time fee, unit cost, or other basis.

Design, Build, Finance (DBF)

A form of PPPs that involves the procurement of an asset using private finance, without private sector operation and provision of the associated services.

Nodal Agency

The nodal agency is responsible for executing the project and assists the department in carrying out the Bidding. Also, this is known as State Designated Agency.

Non-Resident Indian (NRI)

NRI means an individual resident outside India who is a citizen of India.

Special Purpose Vehicle (SPV)

An organization that can be established a distinct legal entity to bring together the companies involved in a PPP to manage the project and share the risks and rewards equally.

Value for Money (VFM)

The optimum combination of costs or every sum of money, risks, completion time and quality to meet public requirements. It is based on the maximum efficiency and effectiveness of the purchase.

Risk Allocation

Risk allocation is the process of identifying risk and determining how and to what extent they should be shared. Understanding the risk in a project construction is an inherent part of the construction process and cannot be eliminated in any partnerships.

Private Finance Initiative

A United Kingdom program encompassing arrangements whereby a consortium of private sector partners come together to provide an asset-based public service under contract to public body.

Private Sector/Party

The private sector constitutes the segment of the economy owned, managed, and controlled by individuals and organizations seeking to generate profit. Traditionally, the private sector has been a special purpose vehicle created specifically for the purpose of the project.

Procurement

The component of the commissioning process that deals specifically with purchasing a service from a provider.

Foreign Direct Investment (FDI)

FDI means investment through capital instruments by a person resident outside India in an unlisted Indian company, or in ten percent or more of the post issue paid-up equity capital on a fully diluted basis of a listed Indian company.

Foreign Investment

In India Foreign investment means an investment made by a person or company resident outside India.

Joint Venture (JV)

Means an Indian entity incorporated in accordance with the laws and regulations in India in whose capital a non-resident entity makes an investment.

Reserve Bank of India (RBI)

‘RBI’ means the Reserve Bank of India established under the Reserve Bank of India Act, 1934.

Preface

The present study deals with the PPPs practicing and managing scenarios of India. This study is aimed at exploring the changes in recent years on the adoption of PPPs policies in public infrastructure sectors.

Much research work has been conducted on PPPs around the world. The concept of PPPs is becoming more popular both in developed and developing countries. Several countries are putting efforts made to develop viable PPPs policies for public sector infrastructure development. PPPs itself is related with various stakeholders including countries political system.

The investment scenario in Indian infrastructure sector is booming with several multi-national companies' participation. As the 1990s economic liberalization several private sector companies are showing their interest to invest in Indian Infrastructure. PPPs model could be the one of the best practice modes to invest in infra-sectors. The purpose of the author is to understand the policies for private sector participation in public infrastructure. This thesis will explore the concept of PPPs in the literature section comparing it with various countries. It will engage in research in the Indian states and the enabling organization showing the evidences. It will help to understand the PPPs process and the relation between the stakeholders.

Abstract

The present research has tried to answer the vital question of how the implementation phase of Indian PPPs is managed how the infrastructure projects procure PPPs and what challenges exist in India have been addressed by analyzing Indian PPPs.

The analysis has revealed that around the world there is the growth of PPPs projects across the infra sub-sectors and various geographical regions are not uniform. In India, there are few sectors, mainly Transport, National Highways, Airports, Urban infra, and Health projects are being developed through PPP mode. Whereas, the rural infra, health, education remains unattractive. Especially, the Indian PPPs projects are concentrated more in the economically developed states than the others.

The determinants of Infra PPPs in India have been empirically determined by macro-economic factors such as inflation, population, GDP, corruption control, political stability, legal and social organizations, rule of law, the quality of regulation has a significant role in determining PPPs investment in India.

The study analyzed the policy factors for the private sector participation to invest in the Indian infrastructure sector. It has discussed the national policies, with a brief explanation of regulatory organizations in important states. As a result, several Institutional and Regulatory organizations have been set up by GoI both in central and states. It has also analyzed the PPPs designing process and the key stages briefly, it could be said that the Indian PPPs procuring process are having a high standard of PPPs implementation. The results reveal that private sectors are eager to invest in Indian PPPs infra projects. The roads and highway sector are one of the choices, respectively, airports, railways are also one of the attractive sectors for private investors.

Further, the study analyzed the two-case studies Delhi-Jaipur highway from the road sector and Delhi International Airport from the airport sector. Both case studies revealed that there is a competitive practice of PPPs stages. In the Delhi Jaipur highway project, the study recommends several factors to get rid up of Land Acquisition, database, forest clearance, and political interruptions. Similarly, in the Delhi International Airport, the study recommends prioritizing to mitigate the issues with AERA. The security concerns and commercial buildings revenues and aeronautical and nonaeronautical concerns should be mitigated to present the project as a successful PPPs project.

Finally, the study sum-ups with suggestions to have a uniformity in both central and state level PPPs process and policies. It suggests GoI set up an Independent Monitoring Organization to mitigate possible issues on time.

CHAPTER 1: INTRODUCTION

1.0 Chapter Introduction

Public-Private Partnerships (PPPs) models are frequently used in the construction, operation, management, and governance of infrastructure projects both in developed and developing countries. Since the date of 1980s PPPs have become increasingly popular and are now it has been practicing in more than 134 developing countries and contributing about 15-20% to total infrastructure investment. The experiences on PPPs projects and their success issues differ in developed and developing countries with their existing legal, economic, social, and political environments.

While procuring PPPs there are some common challenges, risks, limitations, and success factors, although practicing PPPs the framework is dependent and varies with countries with specific factors. In this way infrastructure projects through PPPs are perceived to far better in terms of project delivery performance compared to traditionally procured projects (Yescombe, 2007a). Several international studies contrasting PPPs and conventional projects indicate that PPPs projects have higher degrees of cost and time certainty. And the PPPs approach increases the economic value of infrastructure outputs and facilitates the overall development of infrastructure inside the country.

This research explores PPPs characteristics and their governance, with the managerial problems in India. How and why the Government of India (GoI) is utilizing the PPPs in the public infrastructure. This research investigates specifically, the experiences, views, and perceptions of PPPs actors regarding a range of management issues that emerged during the research investigating the experiences, views, case studies that emerged during the desk research. Overall, the study focuses on the understanding of Indian PPPs managerial challenges facing PPPs actors and how the organizations have adapted to the challenges.

This first chapter aims to explain the rationale behind the research topic. It raises the research question and objectives; it highlights the study's methodology and context presents the research contribution and outlines the structure of the thesis. The present study uses the term PPP, PPPs, and private participation in Infrastructure (PPI) as synonymous.

1.1 Personal Perspective

This section reflects my motivation to investigate PPPs in the Indian infrastructure sector. As Nepal is my country of birth, I have been watching closely many changes in India's economic, political, and social life since the 1990s economic liberalization. After the 1990s economic liberalization, India has changed political, economic, and social life, it has started

to welcome foreign investment in several public sectors. Gradually, private participation in public infrastructure became a mainstream policy in many respects. Also, the landscape has significantly transformed from the traditional way to the modern way in the public sector participation, and multiple institutional, organizational, business, and social changes have become a part of India's reality. From the date of the 2000s, it has started to procure PPPs officially. In this jurisdiction, GoI has set up a legal and policy framework to streamline several administrative laws. As a result, several laws were amended to make private participation much more attractive e.g. regulatory framework, environmental protection laws, Foreign Direct Investment (FDI), policies, etc. while conducting this research, the author has identified many commonalities of practicing PPPs with existing differences in how PPPs governance progressed In India? This became a starting point in my thinking about a research project that would embrace in India and would permit me to research on PPPs management and their challenges. I thought about this potential research as an exciting opportunity to explore the recent developments in India to improve public sector efficiency.

With an educational background in economics and management, the research opportunity materialized when the author was accepted into a Ph.D. program at the Soka University of Japan. This is where my academic interests have transformed into the research objectives that are outlined in this chapter. While making the PPPs the main theme it was a challenging task. Researchers with Indian nationals were few in researching Indian PPPs. Therefore, the author believes that this is worth research on the theme of the Ph.D. dissertation.

1.2 Literature Perspective

PPPs are not a current topic in the academic, professional, and political circles of the modern era. The increasing significance of PPPs around the world provokes a substantial body of literature on PPPs. The specific literature in business, economics, and finance focuses on three main features of PPPs 1) Contract design 2) Ownership, and risk transfer 3) Financing. The main aim of PPPs literature is to illustrate that under certain conditions, the PPPs, by nature of their unique contract agreements, could bring more benefits than conventional public procurement mechanisms. Therefore, several numbers of literature on PPPs arise from the government perspectives, and there have been increasingly inconclusive findings on the gains and losses of private sector involvement in PPPs.

In Asian Countries, large economies like India and China command a lion's share in infrastructure projects with active private sector participation. According to the Advisory firm Oxford Economics expects China will see an annual construction output contract of

8% in 2020 but surge to 14.5% in 2021. Relatively, for India, the output is expected to shrink by 5.4% during 2020, with a rebound to 7.7% in 2021 (Loh, 2020).

Whilst India is a low middle-income country it has an incredibly low potential, in public infrastructure. Also, it has an incredibly low potential to independently implement large and expensive infrastructure projects that are the precondition for attracting investors, increasing employment, providing a better quality of life, as well as social and political stability. Over the years, the basic infrastructure in India has been developed to an extent, which is not sufficient enough while considering India's geographical and economic size, its population, and the pace of overall economic development (Lakshmanan, 2008).

In the literature context, the literature about PPPs is diverse. Developed countries have an ample amount of research and a long history of utilization of PPPs in their countries. Countries like, United Kingdom, the USA, Japan, Canada, has claimed that PPPs in the mainstream of literature (Grimsey and Lewis, 2005). After the 1990s, these types of PPPs are expanding in transitional countries, like South Korea, China, India, Pakistan, and Bangladesh from this literature perspective scholars and practitioners could know little about the PPPs in India.

While PPPs are new in the South Asian Association for Regional Cooperation (SAARC) member countries and India does have very few works of literature on them. There are very few comprehensive studies that focus on PPPs management in India. The literature on Indian PPPs is also silent. There are no comprehensive studies that focus on PPPs management in India. These issues permit the author to argue that a present Indian PPPs - related literature is lacking the management stream that would use a robust theoretical foundation for investigating empirical data.

The rationale for this study emerged, in part, out of the literature appraisal. Whilst the researcher reviewed the large body of the Organization for Economic Co-operation and Development (OECD) literature which highlights certain theories underpinning partnerships and the experience of Western countries in PPPs formation and implementation. In the context of developing countries, PPPs are relatively new, and only a few articles are discussing the specific project of PPPs. Most studies focus on industrialized OECD nations that have accumulated significant experience with partnerships. It could be said that scholars and practitioners know little about partnerships in India and virtually no studies are available about PPPs in India.

Furthermore, to the best of the author's knowledge studies that are devoted to Indian PPPs highlights mostly the financing schemes underlying partnerships and the technical aspects of the PPPs work. Some PPPs projects and their empirical studies have been done but in

the current situation, there are no comprehensive studies that focus on PPPs management in India. As PPPs might revolutionize the public sector in the Indian market, how public services are financed and provided, it is no surprise that partnerships instantly drew considerable attention from policymakers, economists, investors, financial analysts, infrastructure experts, and researchers in many fields. Overall, the Literature perspective on this research consists:

What are the management practices in PPPs in India; what are the key issues regarding the partner interaction evolves; how do the partners manage risks in the project cycle; what factors may ensure success in PPPs projects in India?

1.3 Research Questions and Objectives

This research will on the path of PPPs emergence in the Indian public infrastructure market. It aims to examine the experience and perceptions of key stakeholders involved in the PPPs projects to identify PPPs' shortcomings and critical success factors. The research concentrates on the following research questions:

RQ. 1. How is the implementation phase of Indian Public-Private Partnerships (PPPs) is managed?

RQ.2. How do the Indian infrastructure projects perceive PPPs?

RQ. 3 What are the challenges in PPPs projects in India?

The overall objective of this thesis is to analyze the PPPs framework for the delivery of public infrastructure and related services in India. This research aims to develop the values of PPPs in major Infrastructure projects in India.

To achieve this aim, the research has three specific objectives:

- 1) Develop a theoretical framework for PPPs research in India.
- 2) Understand how PPPs are perceived and applied in public infrastructure projects in India.
- 3) Identify the opportunities and the challenges of PPPs in India.

Each of these objectives is discussed in more detail below.

1. Investigate experiences and perceptions of Key PPPs actors in the Indian Public infrastructure sector regarding the tendering, bidding, contractual environment of partnership projects, and the effectiveness of government requirements and expectations.
2. Analyze perceptions and experiences of key partnership stakeholders (such as project

- managers, officials in government agencies, and national and regional PPP centers) regarding risk management in a project, including initial risk allocation and how these actors should manage subsequent changes.
3. Identify opportunities and challenges in governance and management of PPPs in India, with the focus on critical success factors.
 4. Develop a new model for understanding the nature of PPPs governance in India.

1.4 Research Methodology

The nature of all three research objectives calls for a qualitative rather than a quantitative study. The methodology addresses the variety of participants' subjective insights and views in the contextual environment of India and it permits the researcher to identify commonalities and differences in PPPs governance and management. The Methodology chapter3 provides a detailed discussion of these methods and emphasizes the appropriateness of the study's approach to meeting the research objectives.

1.5 Basic Understandings of India

India is located on the Indian subcontinent in south-central Asia. It is bordered by the Arabian Sea, the Bay of the Bengal, the Indian Ocean, and the countries of Pakistan, China, Nepal, Bhutan, Bangladesh, and Myanmar. India covers 2,973,193 square Kilometers of land and 314,070 square kilometers, of water, making it the 7th largest nation in the world with a total area of 3,287,263 square kilometers. It became an independent state in 1947, after gaining its sovereignty from the United Kingdom. The estimated population in 2020 was 1,380,004,385 people at mid-year according to United Nations data. It means that the Indian population is equivalent to 17.7% of the total world population. New Delhi is the capital city.

In the infrastructure development context, there is a huge gap between demands for and supply of infra services. Day by day the demand for modern infrastructure projects is rapidly widening mainly owing to globalization, urbanization & population growth.

1.5.1 Historical and Political Background

The base of the historical and political background of India goes back to British rule (Alam, 1999). Under British rule, a large number of Indian laborer's were encouraged and/or assisted by the British Indian Government to migrate to other British colonies and to work there in agriculture, mining, on the railways, and many Indian traders and others followed in their wake (Rajan, 1969). India achieved Independence from British colonialization on 15 August 1947, after a bitter sectarian struggle that led to Muslim

majority areas in the northwest and northeast of British India forming the separate country of Pakistan. The union of India is the most populous democracy, organized as a federal republic of 28 states and 7 centrally administered territories. India is ruled under a constitution, promulgated on 26 January 1950, which provides for a parliamentary form of government, where it guarantees the basic rights of Indian citizens, prohibits discrimination based on religion, caste, sex, or place of birth, and demarcates the areas of jurisdiction of the union and state governments.

The 1950's Constitution drew on an ideology that sought to establish a liberal democratic polity following the commitment to constitutionalism and rule of law on the part of the founding fathers than the Constitution that they framed despite serious difficulties due to partition (Chakrabarty, 2008). For many years after independence, India was the leading spokesman of the world against colonialism and racialism. Respectively, many other nations have joined the anti-colonial and anti-racial crusade (Louis, 1985).

1.5.2 Social and Cultural Background

India is considered by some to be one of the most diverse countries in the world with over 122 languages spoken. The topography ranges from Uttar Pradesh to the Great Indian Desert, and the world's largest film industry called Bollywood. It consists of thousands of communities including major religions of the world in predominantly Hindu society with a sizeable Muslim population. Indian peoples speak different languages and dialects; people have their food and habits, professions, industries, handicrafts, traditions, and cultural aspects. The regional and dialects play a role in the variety of languages spoken throughout India, there are possibly 1,652 different languages or dialects. The primary ones are Hindi 41%, Bengali 8.1%, Telugu 7.2%, Marathi 7%, Tamil 5.9%, Urdu 5%, Gujarati 4.5%, Kannada 3.7%, Malayalam 3.2%, Oriya 3.2%, Punjabi 2.8%, Assamese 1.3%, Maithili 1.2%, other 5.9%. English is used primarily in business, and for economic and political purposes literally, there is a saying- there is something for everyone in India (UKEssays, 2018). Demographically, the population of India was estimated at 1.37billion (expected data) (India Population, 2019). Culture and customs are at the center of the social order in Indian communities. The population of India is rising at an alarming rate and therefore the country is known as the second-most populous country in the world after China. Throughout the history of India, religion has been playing an important part in the country's culture. Most Indian citizens associates themselves with religion and religious tolerance is established in both law and custom. Indian society is a complex and variegated society whose inner dynamics are rarely understood by outsiders (Dutt, 1947).

1.5.3 Indian Economy

According to the IMF, India has emerged as the fastest-growing major economy in the

world and is expected to be one of the three economic powers in the world over the next 10-15 years (IBEF, 2020). Independent India is seventy-four years old (1947-2020) and the fastest-growing economy in the world. Yet, poverty, inequalities, and digital divides continue to bedevil the Indian economy. Economic development since 1951 has consisted of a huge amount of continuous and sustained investment.

Over, the past few years India has changed its economic and potential growth expanding its market in global perception. Today, India finds itself among a list of 12 countries with a GDP above 1 trillion dollars and growing fastest in the world (Sharma, 2009). A major liberalization of trade and investment regimes has taken place since 1991 as a part of the package of reforms undertaken to deepen the integration of the Indian economy as a whole (Kumar, 2019a). Despite an uncertain global outlook where major economies have shown gradual progression, the Indian Economy has continued to grow upward of 7% level since 2014. Despite a slowdown in FY 2016-17, India's GDP has grown at 8.2% annually in 2018-19 and as per IMF projections, it is expected to grow at around 8% in 2019-20 and 2020-21 making it the world's fastest-growing economy.

1.5.4 Economic Model

Under the British colonization, India was lacked exposure to modern technology with well-organized markets and faced several internal price repressions and a deluge of non-competitive imports. The GoI has implemented Prime Minister Jawaharlal Nehru's Development model. Nehru's model envisaged a dominant role of the state as an all-pervasive entrepreneur and financier of private business. In the past, the Industrial Policy Resolution of 1948 proposed a mixed economy. Nehru was determined to give socialism a position of high priority on the national agenda arguing that without it "Neither the country nor the individual could develop much." He believed that capitalism served a useful purpose by increasing production and improving the living standard however, it leads to exploitation and inequality (Abadi, 1993). Today, India is trying to break with the economic policies that underpinned Nehruvian thinking and to open itself to world trade (Klein & Palanivel, 2000).

In the early 1990s, India has followed the organic methods and has concentrated more on the development of the institutions and indigenous capability that support private enterprise by building a stronger economic infrastructure to support it. Once, Peter Drucker said: The economic Dominance of the US is already over. India is becoming a powerhouse very fast (Mathew, 2010).

After 1991's economic liberalization Indian economy has been described as 'huge, complex and growing'. According to the World Bank calculations based on purchasing

power parity (PPP), it was rated as the world's fifth-largest economy in 1994 and it was expected to be the fourth-largest economy in the world by about 2020. To gain economic progress and to put India in the world's economic club India made a decisive shift to a more open and liberal economy (Nayar, 2001). Respectively, the World Bank and other bodies have regularly projected that India is likely to sustain its economic growth over the coming decade and more and is likely to become the second or third leading economy of the world. Outsourcing has been the biggest boom in the Indian economy. The English-speaking population has been instrumental in making a preferred destination for information technology products as well as business process outsourcing. India has a two trillion-dollar economy, one of the biggest in the world. It is also one of the member countries of BRICS. The BRICS are a group of countries with the biggest economic growth potential. India is also a member of many international financial institutions like the World Trade Organization, the International Monetary Fund, and the Asian Infrastructure Investment Banks etc.

In this way, the dynamic, diverse economy is steadily expanding in major sectors including manufacturing industries, agriculture, textiles, and handicrafts, and services. Agriculture constitutes a major component of the Indian economy over 66% of the Indian population earning its livelihood from this area. India is also primarily driven by domestic consumption which is the contrast with Japan and China which follow an export-oriented model.

1.6 The Importance of Studying India

On the one hand, India is huge in its geography, with more than 1.3 billion people, and on track to become the world's third-largest economy. The society of India is in transition, the transition rules are deeply institutionalized, and long-term political stability and democracy are assumed. Broadly speaking, SAARC countries share similar social and cultural values and managerial and social development objectives and challenges, although there are still considerable cultural and economic differences among them. The SAARC countries are striving to create a modern infrastructure to support the development and compete in global markets. The infrastructure needs in the SAARC countries are also large. But there is always a budgetary limitation while investing in public infrastructure. In effect, they are increasingly turning to the private sector to build, maintain, and operate a various variety of facilities under long-term PPPs contracts.

1.7 Research Contributions

There is ample evidence that PPPs have been widely used internationally, both in Europe and Asian countries. And will continue to be used in the future as an important tool for governments around the world to deliver public service and goods to their citizens. This is evident from the huge investment in PPPs worldwide, as well as in India. This research has suggested that there is a critical need to review the experience of PPPs internationally by gathering evidence from different countries to better grasp what a PPP is and how it should be understood and managed.

The research makes several contributions to theories. Firstly, it discusses the partnership in economics. Further, it adds new insights into conceptualizing PPPs. The thesis argues that PPPs interplay between the public agencies and private investors, PPP centers, a Special Purpose Vehicle (SPV), which is a project operator, contractual dependencies, and formal and informal interactions between the actors. Hence, the study augments the theoretical underpinnings of partnership by emphasizing PPP arrangements and relationships that include multiple organizations and stakeholder groups (Fischbacher & Beaumont, 2003). Additionally, the study adds to a deeper understanding of partnerships by adopting a view on the nature of PPP arrangements as a cooperative effort to jointly create value for its stakeholders.

1.8 Significance of the Research

This study may be significant in providing PPPs executives input in evaluating PPP activities in India. This study may also represent a contribution to the research community upon which further research could be built to complement or challenges the study outcomes. The positive social impact that study may offer is that investigating PPPs executives for the best practice evaluation perspectives may add further economic growth in India. Further in this study, I addressed the PPP impact on economic progress and the standards for evaluating this impact. Several researchers in the field established that PPPs management and performance is the challenging task itself when it comes to its economic impact evaluation. I investigated the potential of arriving at an economic correlation between the investment spent by the GoI and the investment by the private sector and the impact of such spending on economic development progress in each situation. The research intended to bridge the research gaps represented by the lack of addressing economic development results. This study aimed at addressing the issue of government limitations on evaluating PPP comparatively to determine which PPP arrangement or decision may represent the optimal solution for a respective public administration situation.

1.9 Limitation of the Study

- The selected literature and case study in this thesis may not cover the whole Indian infra projects.
- This study is based on India, which is a developing country, the rules and regulations vary from state to state and the PPPs development framework may not be applicable for other nations and other states of India.
- Due to the GoI data information system, the study has used fewer data.

1.10 Structure of the Thesis

The thesis is bonded into six chapters. The Chapter first is introductory. It has provided an overview of the research rationale and context and outlined the research scope, objectives, and methodology. It has highlighted the key contributions of the Ph.D. thesis to theory, methodology, and practice. In the last section, the chapter presents a review of the research structure.

Chapter 1 has set the foundation and the directions for the current research. An overview of the study's research purpose, motivation (Personal and literature) Research question, the importance of the study, research problem, research questions, methods, and delimitations were provided in the first section of this chapter. In the second section of this chapter, an overview of the study context, including the historical, social, cultural, and economic background of India was presented.

Chapter 2 *Literature Review*– Synthesizes the relevant literature to define the focus for this research. This chapter clarifies the context of this research, discussing the evolution of Public-Private Partnerships as a policy instrument for infrastructure development worldwide and in India. The historical evolution that led to the use of PPPs advantages and criticisms, and examples of the use of PPPs in different countries. After this, chapter 2 discusses PPPs for infrastructure development and it provides the literature appraisal with the research topic.

Chapter 3 *Research Philosophy and Methodology* explains the methodology that has guided this research. Where it highlights firstly the philosophical stance that the author adopted, justifies the qualitative approach that the researcher selected, and demonstrates its

suitability for answering the research question and meeting the research objectives.

Chapter 4 *PPPs in India*: identifies the research findings and presents its analysis using a thematic approach. This chapter discusses the background of the implementation of PPPs in policy paradigms. It includes Institutional frameworks, historical evolutions in Indian PPPs, and the Indian way of designing PPPs.

Chapter 5 *Case Study* the research findings and continues to explore the themes from the previous chapter. The chapter reveals the research results as they relate to existing knowledge and theories about PPPs. Delhi-Jaipur Highway and DIAL airport are discussed as case studies.

Chapter 6 presents findings conclusion and future work.

Chapter Summary

This chapter has introduced the research topic and provided an overview of the motivation for the study and its contextual setting. The author has identified the research question and research objective along with a summary of principal theoretical, methodological, and practical contributions that this study makes. The chapter also outlined the structure of this thesis. The following chapter presents the literature appraisal which critically examines the relevance of extant PPPs studies to the topic of this thesis.

CHAPTER 2: LITERATURE REVIEW

2.0 Chapter Introduction

The Literature review is carried out to know the previous research works and the pieces of literatures relevant to the study. In this chapter through literature review, the various aspects of PPPs, and their development phases, as well as developed policies in worldwide literature and similar studies by earlier researchers are described. This is carried out by a review of theories and review of thesis.

This chapter explores some of the theoretical and policy issues concerning the reasons for developing and operating PPPs. Some certain literature streams provide a useful theoretical background for this study, particularly in the arrangements, government strategy, and relational governance or the quality of the relationship between public and private partners. The purpose of this chapter is to conceptualize the research topic by first discussing the concept of PPPs as a policy instrument for infrastructure development worldwide and in India. The discussed Literature streams provide a useful theoretical background for this study in PPPs governance and the quality of the relationship between public and private partners. Both PPP's governance strategy and relationship quality complement legal contracts and the effective interaction between partners may significantly mitigate risks and contribute to overall PPPs success. Concerning the Indian PPPs, the scholarly approaches are just emerging in India and focus mainly on the legal aspects of PPPs formation, relational issues are largely absent from the Indian language literature. The discussion of the partnership's general aspects, such as the reasons to procure PPPs and the understanding of risk and risk allocation in a partnership, allows the researcher to contrast and compare the international sources with an evolving academic view on PPPs of India.

The first section presents the general understandings of PPPs conceptual definitions and their characteristics. The sub-section discusses on the Matrix of PPPs. The third section discusses on the forms and the modalities of PPPs. The fourth section discusses on the investment determinants. The fifth section discussess on the Principles and the major characterisitics. Several countries and their definition of PPPs are shown in table 2.2. This section connects with the literature on infrastructure. This section defines the understandings of infrastructure on literature. Further, it connects with the PPPs model and the infrastructure sector.

The second section of the chapter discusses on the literature of Infrastructure. The Infrastructure and the managerial aspect of PPPs, during the implementation phase of

development, is the most problematic type of management, due to the complicated and uncertain organizational settings that PPPs operate within (Bovaird, 2004; Vining & Boardman, 2008). The existing institutional and organizational differences among partners involved in a PPPs arrangement, and the sophisticated management competency and expertise required to manage this type of hybrid organization, add more challenges to the management and application of PPPs. Therefore, to provide deeper insights and understanding of the micro-level management aspects of PPPs in the Indian public infrastructure sector, the Author provides the literature on the evolution of Indian PPPs, and the characteristics are analyzed in further chapters.

2.1 Conceptual definitions of Public-Private Partnerships

2.1.1 Defining Public-Private Partnerships

In general Public-Private Partnerships is an innovative procurement approach in which public and private actors co-operate to develop infrastructures and deliver public services, with sharing risks, costs, and benefits (Koppenjan & Klijn, 2005). The term PPPs is an arrangement between an agency of the government (public sector) and the private enterprises as (private sector) in the delivery of goods or services to the public areas. The public sector includes a wide range of social services, like public transportation and environmental services, health, education, electricity, etc. In simple language, the public sector is the country's overall economy owned by the government whereas the private sector is part of the country's economy owned by private individuals and private companies. The public sector encompasses the companies or businesses wherein the government is the owner of the business by way of shareholdings in the business. Also, the business is controlled, managed, and operated by the Governments.

Overall, the public sector is a body of the state it deals with the delivery of goods and services by and for the government, whether national, regional, or local/municipal government-related organizations. The private sector includes companies, enterprises, and business which are owned and controlled by private individuals or private companies. Therefore, while forming the partnerships the public sector and the private sector should go in one perspective and make a single motto in the success of the project. Researchers, claim that the formation of public and private partnerships is based on the weakening of the direct influence of the state in the economy, transferring functional authority to the private sector and at the same time preserving and strengthening its control (Bazhenkova, 2016).

In literature, the available PPPs definition is very wide. The contents and objectives vary according to the nature of the country's specific background and the specific interest of the

individual author. Some academic and industrial practitioners regard the definition of PPPs as very ambiguous.

The official definition of PPPs by the “Federal Report on PPPs in Public Real Estate, Part 1: Guideline”, commissioned by the German Federal Department of Transportation, Construction and Real Estate (BMVBS) in 2003, is describing as follows “The term PPPs refers to a long-term contractually regulated co-operation between the public and private sector for the efficient fulfillment of public tasks in combining the necessary resources (e.g. Know-how, operational funds, capital, and personnel) of the partners and distributing existing project risks appropriately according to the risk management competence of the project partners”. Respectively, a researcher like V.Varnavskiy (2009) states that the PPPs, is an “institutional and organizational alliance between government and business to implement national and international, large-scale and local, but always socially significant projects in a broad range of areas: the development of strategic industries and R &D to provide public services”.

While forming the partnerships in the potential synergy, firstly the partnerships are in mathematical sum form, so the sum is greater than the parts. Secondly, the partnership involves both the development and delivery of a strategy or a set of projects or operations, where each actor may not be equally involved in all stages. Third, in public-private partnerships, the public sector is not pursuing purely commercial goals. The criteria of partnerships are the presence of social partnership (it excludes purely commercial transactions). However, there is a form of “association of decisions and public and private means within the framework of the same system of action, aiming to comply simultaneously with the consumers and citizens’ expectations”, which is known as PPPs. In this thesis the author broadly defines PPPs to include all development-oriented partnerships between the private and public sector, where the private sector provides resources (mainly capital), further it takes responsibilities for risk-sharing, and receives some of the financial benefits. According to Yescombe, (2007a) PPPs as defined here have the following key elements:

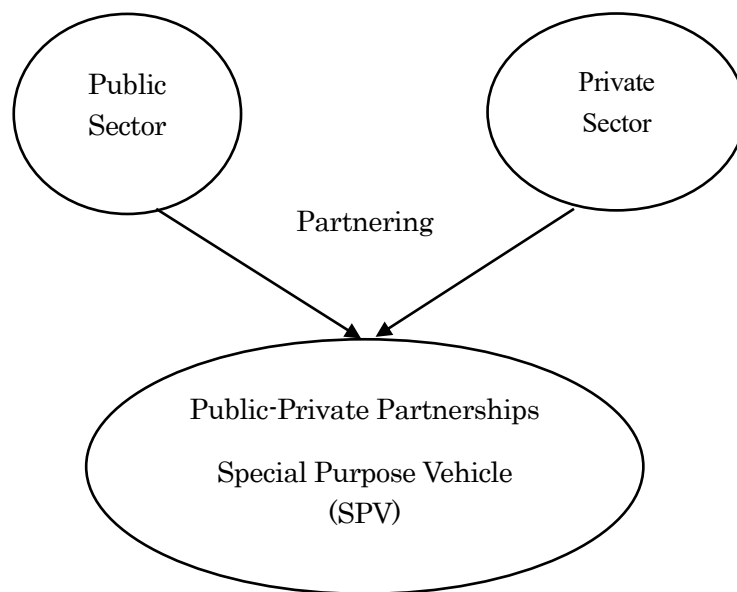
- A long-term contract (a ‘PPP Contract’) between a public-sector party and a private-sector party.
- For the design, construction, financing, and operation of public infrastructure by the private-sector party.
- With payments over the life of the PPP contract to the private-sector party for the use of the facility, made either by the public-sector party or by the public as users

of the facility.

- With the facility remaining in public sector ownership or reverting to public-sector ownership at the end of the PPP contract.

For general understanding, figure 2.1. shows the simple form of PPPs. In the simple understanding there are two parties in PPPs formation, one is from government sector or as public sector and the other is from the private sector, or individual. Both public and private parties come in an understanding and have the partnership, under certain rules and regulations.

Figure. 2.1: Common structure on PPPs



Source: Compiled by the Author

For this research, the author broadly defines PPPs to include all development-oriented partnerships between the private and public sectors, where the private sector provides resources mainly capital, takes on a share of the risk, and receives some of the financial benefits. The Author will see the private sector can take a multitude of roles within these partnerships, including finance, direct investment, monitoring, maintenance, full operation, and result measurement.

The following table 2.1 and table 2.2 shows the author's collection of several literatures on PPPs. Scholars like Grimsey & Lewis (2005) are in forefront of PPPs research, Klijn and Teisman (2003) developed the definition in products its services and analyzed with possible risks, costs and benefits, similarly Hamamami, Ruhashyanki, ko and Yehoue

(2006) showed the importance to fulfil the so-called infrastructure gap between the government service to the citizen's demand.

Table 2.1: Several Definitions on PPPs

Definition	Author(s)
PPPs are conceptualized as a contractual agreement between one or more governments/public agencies and one or more private sector or nonprofit partners to support the delivery of public services or financing, designing, building, operating, and/or maintaining a certain project.	(Roman, 2015)
A long-term contract between a private party and a government entity, for providing a public asset or service, in which the private party bears significant risk and management responsibility, and remuneration is linked to performance.	(World Bank, 2020)
Any action which relies on the agreement of actors in the public and private actors and which also contributes in some way to improving the urban economy and the quality of life.	(Harding, 1991)
Arrangements whereby private parties participate in or provide support for, the provision of infrastructure and PPPs projects result in a contract for the private entity to deliver public infrastructure-based services.	(Grimsey & Lewis, 2005)
Public service and/or a private economic activity, which is jointly financed and operated by the public sector and industry based on a contract which regulates financing and operation.	(Koschatzky, 2017)
PPPs are a means to finance and deliver publicly demanded quality services, from private and public sectors. It is structured to overcome, public sector difficulties with lackadaisical performance and inefficiency due to monopoly status.	(Linder & Rosenau, 2000)
Due to tighter budget constraints and to a renewed interest in greater involvement of the private sector in the provision of public services, as a result, PPPs are likely to grow in near future for both in developed and developing countries.	(Iossa & Saussier, 2018a)
PPPs can be defined as 'co-operation between public and private actors with a durable character in which actors develop mutual products and/or services and in which risk, costs, and benefits are shared.'	(Erik & Greet, 2003)
From the economic prospects, PPPs projects are intended to generate a combination of allocative efficiency and productive efficiency that is superior to an entirely public or entirely private project.	(Välilä, 2005)

PPPs arrangements allow the public sector to consider unaffordable projects. In this respect, PPPs help fill the so-called infrastructure gap between what the government can afford and the citizen's demand.	(Hammami, Ruhashyanki ko, & Yehoue, 2006)
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Source: Compiled by the Author

Table 2.2: PPPs defined by Various organizations

HM Treasury: An arrangement between two or more entities that enables them to work cooperatively towards the shared or compatible objectives and in which there is some degree of the shared authority and responsibility, a joint investment of resources, shared risk-taking, and mutual benefit.
The World Bank: The Term “PPPs” refers to several elements including the existence of a ‘partnership’ style approach to the provision of infrastructures as opposed to an arm’s length ‘supplier’ relationship... Either each party takes responsibility for an element of the total enterprise and they work together; or both parties take joint responsibility for each element... A PPP involves a sharing of risk, responsibility, and reward, and value.
Hong Kong Government: Arrangements where the public and private sectors both bring their complementary skills to a project, with varying levels of involvement and responsibility, for the purpose pf providing public services or projects.
OECD defines a PPPs as an agreement between the government and one or more private partners (which may include the operators and the financiers). Within the agreement, the private partners deliver the service so that the service delivery objectives of the government are aligned with the profit objectives of the private partners. The effectiveness of the alignment depends on a sufficient transfer of risk to the private partners.
IMF defines PPPs as an arrangement in which the private sector supplies infrastructure assets and services that traditionally have been provided by the government. Further, for the project execution and financing of public investment, it includes two main characteristics: 1) service provision, and 2) investment amounts by the private sector.
The Canadian Council for Public-Private Partnership defines PPPs is a cooperative venture between the public and private sectors, built on the expertise of each partner, that best meets clearly defined public needs through the appropriate allocation of resources, risk, and rewards.

Source: Compiled by the Author

2.1.2 Public Sector and its Characteristics

In liberal democracies or the so-called capitalist democratic societies, there is an important divide between two sectors of the economy or society: the public and the private. The institutions of politics, government, and bureau populate the public sector whereas various market institutions inhabit the private sector. The public sector is a part of the state that deals with the delivery of goods and services by and for the government, whether national, regional, or local/municipal organizations. The role of the public sector in economic production is often shaped by the public policies of the individual country. According to Perrot & Chatelus (2000a), the public sector is largely characterized by bureaucratic and hierarchial decision-making and management systems. It has an enormous impact on making procurement decisions for infrastructure projects, and the process inevitably leads to a long time. In a traditional way, it served the public through a set of hierarchical structures responsive to the politicians (Lane, 2000).

In the financial sector, public finances in several countries are often sourced from elastic public revenue sources that are coupled with high public debt. This process greatly limits its ability to effectively fund for such projects especially because of the responsibility of government to finance from these limited resources. In addition, social and public responsibility rather than profit motives are the overriding concern of the public sector. To tackle the financial, social, and political challenges, public sector organizations all over the world need to rethink, adapt, and change their underlying service process. While prompted by these challenges public managers have turned to the private sectors for solutions (Jurisch, Ikas, Wolf, & Krcmar, 2013). In this way, before the independence there are several public sectors inside India, such as Indian railways, the post, and telegraphs, the port, the ordinary factories, All India Radio, airports, etc.

2.1.3 Private Sector and its Characteristics

The private sector brings a performance-driven culture in addressing any market. Once management is figured out the business model, bringing the operation to scales is a necessity for their bottom line. The private sector platforms allow for new ways of doing business by connecting different market actors (Ottlewski & Gollnhofner, 2019). According to Perrot and Chatelus, (2000b), the private sector pursues the profit motive and consequently is characterized by a flexible and less bureaucratic decisions that will support the achievement of the objectives. These decisions making structures are instrumental in facilitating timeliness and efficiency in implementing projects (Oluoch J. O., 2009). Additionally, private sectors are useful in enhancing better risk management than the public sector. This especially applies to the technical and operating risks of infrastructure projects

that call for swift remedial actions to conform to changes in the implementation environment. Whilst in the financial a variety of sources continues to be financed by domestic savings and international investments. Besides the lack of political legitimacy to implement projects that have high potential, however access to foreign sources of capital plays an increasingly important role for the private sector in developing as well as developed countries. Hence, the private sector sources of capital play an increasingly important role for the private sector in developing countries. According to the above explanations, the following table, (table 2.3, 2.4, and 2.5) shows the characteristics, variations, and reasons of public and private sectors to undertake a PPPs model.

Table 2.3: Characteristics of Public and Private Sectors

	Public Sector	Private Sector
Meaning	The public sector is a nation's economy, and is under the control of the Government, whether it is central or state.	Private sector is also a nation's economy and is owned and controlled by private individuals or companies.
Objective	To serve the citizens residing in the country.	Earning profit under the circumstances.
Monetary	Collects public revenue like tax, duty, penalty, and other charges.	Issuing shares and debentures or by taking loans.
Working Areas	Police, Army, Health, Manufacturing, Education, Telecommunication, Every sector of Infrastructure, Insurance	Finance, Information, Manufacturing, Banking, Infrastructure, Pharmaceuticals,
Stability of employment	Yes	No

Source: Compiled by the Author

Table 2.4: Variations between Public and Private Sectors

	Public	Private
Principle of distribution	Democracy	Price system
Principal	Citizen	Owner
Objective	Ambiguous	Distinct
Control	Ambiguous	Distinct
Hierarchical levels	Many	Few
Incentives	Weak	Strong
Job security	High	Low

Principle of localization	Geography	Market
Principle of competency	Municipal considerations	Market
financing	Taxes	Sales
Market structure	Monopoly	Competition

Source: Dahl & Lindblom, 1953

The fundamental distinction between public and private spheres is based on the research and the process of resource distribution.

Table 2.5: Reasons for Undertaking PPPs

Reasons for the public sector to undertake a PPP	Reasons for the private sector to undertake a PPP
<ul style="list-style-type: none"> -Lower overall costs and lower initial capital costs enable the government to avoid or reduce budget deficits. -Shortage of public sector managerial and technical skills. Greater efficiency and creativity in the delivery of public services thanks to the use of the private sector's managerial and technical skills that provide a surplus for PPPs in comparison with traditional projects, i.e., financed solely by the public sector. -Wish to reduce the risk for taxpayers, maximizing user's charges whenever it is possible. -Introduction of competition among the private sector entities, which fosters the reduction of costs and the delivery of quality services. 	<ul style="list-style-type: none"> -Opening of markets that were so far monopolized by the public sector, and therefore the existence of new investment opportunities. -Long-term guarantees that cooperation with the public sector gives, which enables private entities to launch projects that would be, under normal conditions, too risky.

Source: Ahadzi & Bowles, 2004 & Landow & Ebdon, 2012

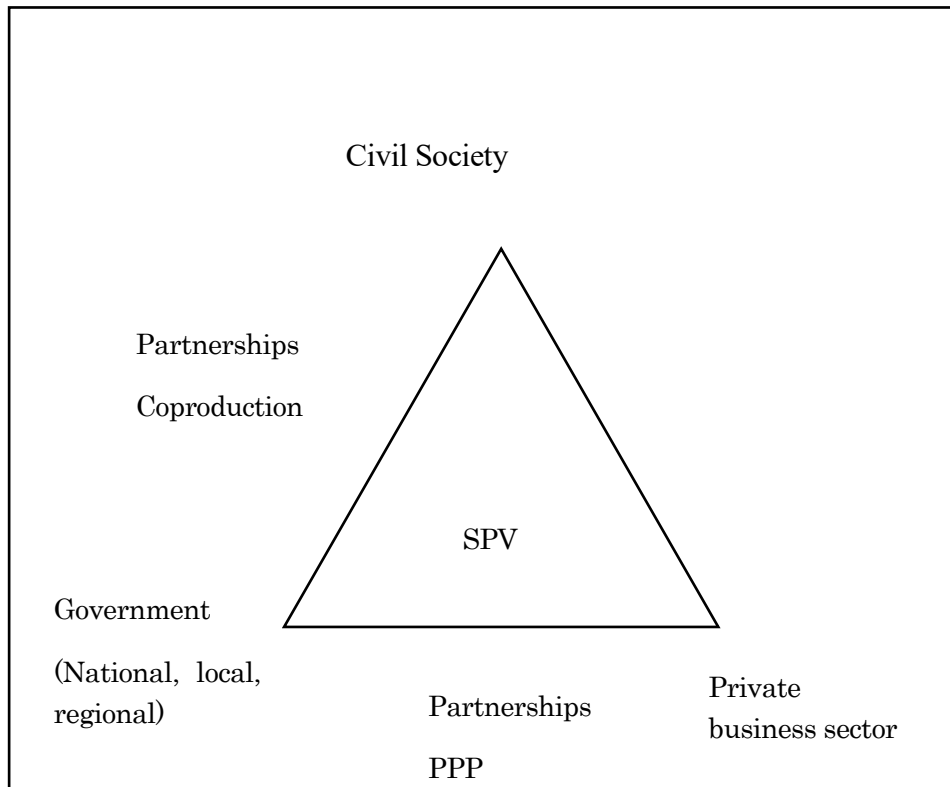
2.1.4 Partnerships and its Characteristics

There are numerous definitions of partnerships between the public and private sectors. Mathur defines partnerships as new organizational arrangements that embody a commitment for joint action towards collective public policy goals (Mathur et al. 2003). Similarly, other definitions include several characteristics of partnerships. Baud & Dhanalakshmi, (2007) defined a partnership as follows:

- Partnerships involve two or more actors (private or public actors).
- It refers to a long-term relationship between actors regarding public goods provision.
- The relationship tries to benefit all actors.
- It is expressed in concrete activities, in which actors invest materially or immaterially.
- The process includes give and take as bargaining process, sometimes the bargaining process can include tension and conflict as well as co-operation.

These definitions have a common perspective on partnerships: A joint action in partnerships concerns collective public policy goals or the provision of public goods. Apart from its partnerships allow for many interpretations. It comes in various forms: some are based on legally binding rules or contracts, others are more loosely organized; some focus on just one activity, others are involved in various activities; sometimes one actor dominates, and tension and conflict are more prominent than cooperation. Taking the relationship between state, market, and civil society as a starting point, three different types of partnerships are distinguished: those are between government and public sector companies, those between government and community-based organizations, and those between the private sector and community-based organizations.

Figure 2.2: A framework for Analyzing Partnership



Source: Michels, 2013

According to Michels, (2013) figure 2.2, it is assumed that cooperation in networks and partnerships leads to better service provision, more efficiency, and better opportunities for citizen groups to promote their wishes. According to Kooiman, (1993) “No single actor, public or private, has all the knowledge and information required to solve complex, dynamic, and diversified problems; no actor has sufficient overview to make the application of needed instruments effective; no single actor has sufficient action potential to dominate unilaterally in a particular governing model”.

On the other hand, partnerships also raise questions concerning issues of responsibility and accountability and issues of responsiveness and democratic legitimacy.

2.1.5 Reasons for Partnering on PPPs

As PPPs are often associated with several advantages, it is worth discussing what benefits partnerships may bring. The term “partnering or ‘partnership’ covers greatly differing concepts and practices and is used to describe a wide variety of types of relationships in a

myriad of circumstances and locations. Researchers have described that there is an infinite range of partnerships only the activities as the method for carrying out such a partnership approach are limited only by the imagination, and economic development offices are becoming increasingly innovative in their use of the concept (Lyons and Hamlin, 1991b). Whether involving people who work in different organizations or those who work in different subdivisions of the same organization, partnerships achieve goals by accessing previously isolated financial, intellectual, cultural, and social capital developed by diverse groups and directing this capital toward improvement.

One of the first definitions of partnering was provided by the CII in 1991: According to CII. The necessity of partnering in economic development perspective, Sellgren, (1990) defines partnership as a scheme with involvement or funding from more than one agency. Scholars, like Crowley & Karim (1995) define partnering as, “a means of resolving inter-organizational conflict’, they stress partnering as a device for removing those inter-organizational barriers which tend to prevent project success. Partnering on PPPs is often associated with an ample number of advantages; it is worth discussing what benefits partnerships may bring. Through the partnerships there are three major options for infrastructure delivery, which are a) Direct public provision, b) Contracting-out, and c) Public-Private Partnerships (Vining and Boardman, 2008). The literature thoroughly explores numerous reasons for partnering. Hofmeister and Borchert, (2004) point out that in most cases economic efficiency and effectiveness are the major criteria for partnering. Mainly, it is about to strike the concept of “Three E”- Economy, Efficiency, and Effectiveness (Jackson, 2012). Jackson further discussed in Table 2.6 in the importance of three “E” . Although the literature highlights certain benefits related to PPPs, the majority of scholars commonly embrace the VFM perspective when they discuss PPPs advantages and disadvantages.

Table 2.6: Three “E” Point of View

Economy	Reducing the cost of resources used for an activity, about maintaining quality.
Efficiency	Increasing output for a given input, or minimizing input for a given output with regard for maintaining quality.
Effectiveness	Successfully achieving the intended outcomes from an activity.

Source: Based on Jackson, 2012 Compiled by the Author.

In this way, Crowley & Karim, 1995a on Conceptual Model of Partnering, summarize the theoretical basis upon the ideas of partnering. They described partnering as a ‘means of resolving inter-organizational conflict’ and a device for removing the inter-organizational

barriers which tend to prevent project success. Table 2.7 shows the Conceptual model of partnering and its objectives. Most of the concepts are intended to the project and tries to satisfies of all concerning elements, which reflects to achieve the better results.

Table 2.7: Conceptual Model of Partnering

Project Partnering Agreement objectives
<ul style="list-style-type: none"> • Design, construct and operate a high-quality scheme to the satisfaction of all concerning elements. • Achieve or better all program targets. • Maintain a team effective relationships. • Operate effective team relationship. • Resolve any contentious issues at the lowest possible level in a timely and progressive way. • Achieve or better all environmental objectives.

Source: Smith, (1999)

While applying VfM in PPPs it is supposed to bring greater value for the invested money that the public sector spends, compared to where the government provides a service in-house or where the government contracts out a service to a private company. The underlying logic that using the PPPs will make sense only if a PPPs model can deliver public sector services in quality, cheaper and better, meaning at a smaller cost as opposed to other options, and with improved quality as opposed to other options. If there is an absence of VfM, the government PPPs project costs become high than the cost of the direct public service provision, in that case, PPPs should not be employed (Mouraviev, 2013). The VfM perspective manifests itself in a differently. Whilst the government considers whether and in what type of projects needs to employ PPPs. For the implication of PPPs, the overarching aim should be to get a good deal for the taxpayers (Colman, 2000). OECD defines the VfM as it is not a tool or a method but a way of thinking about using resources well.

The comprehensive definition of VfM is available in the U.K.'s. Her majesty's treasure *Value for Money Assessment guide* (1998) defines as 'Value for Money is the optimum combination of whole-of-life costs and quality of the good or service to meet the user's requirement'. The term whole-of-life is used to refer to the lifecycle of the good or the service. VfM is not the choice of goods and services based on the lowest cost bid according

to the relevant literature and research and PPPs are mainly implemented to achieve potential benefits compared to traditional procurement methods. It includes the following components.

- a) Earlier delivery of a planned capital investment program, as PPPs can provide important additional funding.
- b) Steps in PPPs project development and implementation.

2.1.6 Structuring of PPPs

A PPP structure is formed through various agreements with various entities and with various participants. On one hand participants found in all project deals with sponsors, construction contractors, lenders, insurance providers and related partners. On the other hand, participants found in some, but not all project finance deals include government, off-taker, resource supplier, and third-party operators. In general, the stakeholders of PPP projects are contractors, suppliers, operators, equity holders, government and its agencies, financial institutions such as offshore and domestic banks, multilateral and bilateral agencies, export credit agencies, and insurance companies (Chowdhury, Chen, & Tiong, 2011). In this way, a typical PPP structure is considered a more complex system than the traditional procurement (ESCAP, 2021). It was established for full integration with a single point of responsibility to accommodate the creation for exclusively of the financing arrangement and the bundling of contract strategies (Zawawi Zin, 2017).

While creating a PPPs in for infrastructure project the following entities as parties plays an important role:

- A government department is acting as the client.
- A government department acting as an agent to the client department.
- SPV consisting of a group of private sector corporate entities coming together specifically to design, build and operate the facility.
- A financial institution that provides the private sector with financial support.
- A construction contractor that designs and builds the facility.
- An operations contractor that operates the facility.

- A facilities management contractor maintains the facility.

Generally, a government department, realizes that there is a need for a service to be rendered and for large capital infrastructure to be built. There would be an appropriate government department representing the interests of the client government department interest. For example, the department of public works, infrastructure department acted as an agent on behalf of the central government. This agency then appoints professionals for the legal, financial, technical, and operational fields to advise it and prepare the necessary documentation and output specifications for interested parties to respond (Devan, 2005a). Further, interested entities then start to have partnered with one another and form an SPV and submit their respective proposal in response to the output specifications. The SPV would comprise a party to design and build the facilities and a party to operate and maintain the facility. Similarly, a new entity in the form of an SPV is generally the preferred way of contracting with government agencies.

In the private SPV that employs the services of professionals from the built environment to undertake the feasibility of the project, the design and construction specifications of the projects. The following figure 2.3 shows the main contractual and financing building blocks for hard infrastructure projects. Yescombe (2007a) has highlighted the key elements in the PPPs structure and are discussed as follows:

- A project company owned by private sector investors.
- Financing for the project's capital costs through shareholder's equity and project-finance debt.
- A design and build contract, under which the contractor agrees to design and construct.

In this way, it could be said that Infrastructure projects are heterogeneous. And yet to create an asset class standardization is useful. But this does not mean standardizing underlying projects. Rather the focus should be on standardizing analyses, processes, and documentation. The infra-projects may be different but if a common framework of analysis can be agreed then this will assist institutional investors in buying infrastructure securities (Ketterer & Powell, 2018).

Typical PPP project Structure shows typical finance and contract structure for a PPP project. The Government's primary contractual relationship is with the project company. This may be complemented by a direct agreement between contracting

authority and lenders, although often this relationship is limited to the provision in favor of the lenders included in the PPP agreement, such as step-in rights or senior debt repayment guarantees.

- **Organization of PPPs**

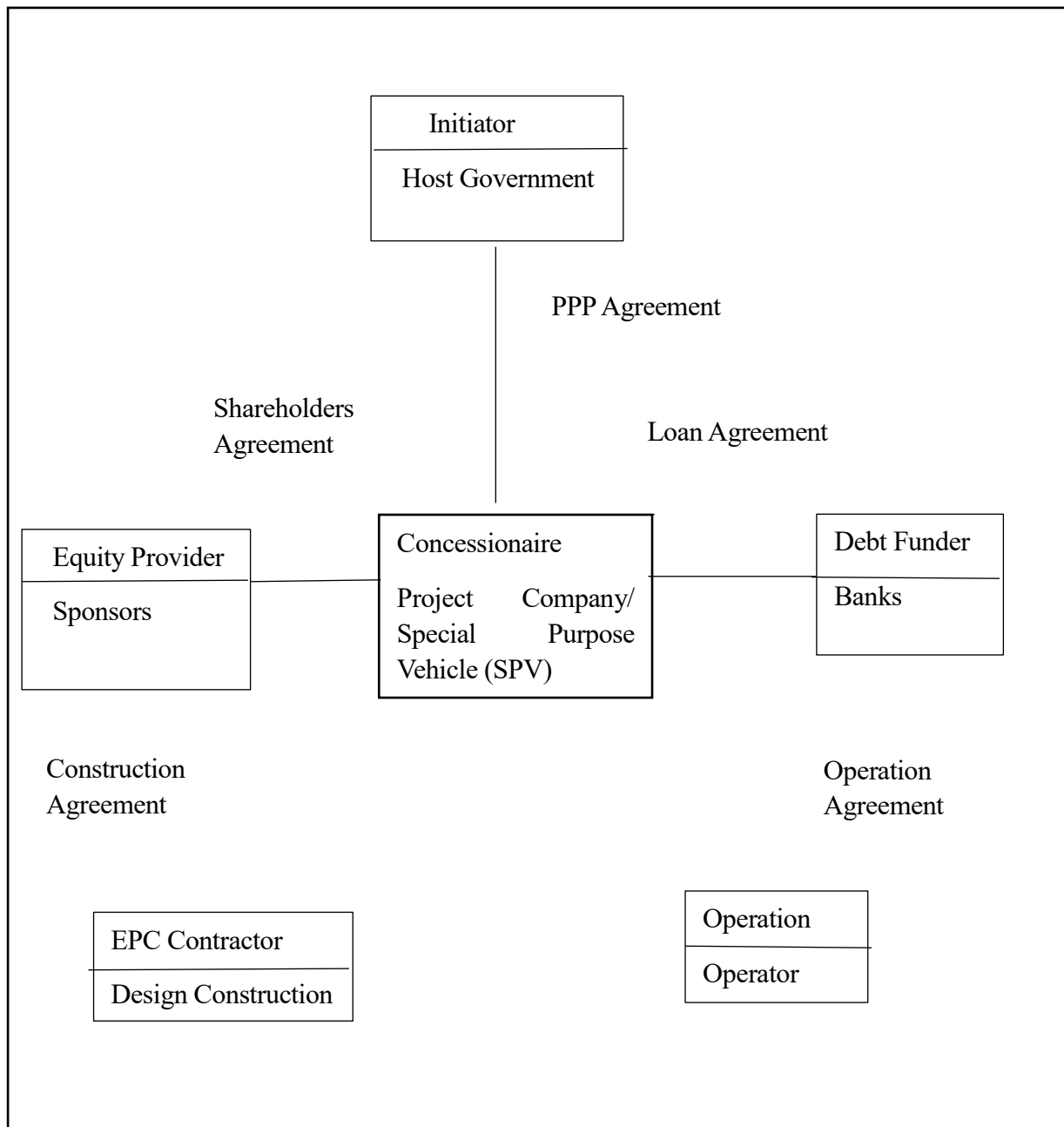
PPPs is an organizational structure that brings together several parties for infrastructure investment, typically in the form of SPV.

The main participants are described as follows:

- The public sector procurer (the government, local agencies, state-owned entities).
- The sponsors who as equity investors normally create an SPV/ Project company through which they contact with the public procurer, and the principal subcontractors.
- Financiers.
- Subcontractors and other involved parties as advisers (legal, financial, technical, insures, monitors, etc.)

In every project, these participants retain their own identity and responsibilities. They combine in the SPV on clearly defined responsibilities and risks.

Figure 2.3: Typical PPP Structure



Source: UNESCAP (2011)

Broadly speaking, the project structure refers to the architecture of contract relationships and cash flows that govern the development and life of the project. This structure can be used for both user-pays and government-pays PPPs. As shown in figure 2.2, and 2.3 the role of SPV required to secure finance for the development and enter an agreement with the financial institutions. According to the nature of the SPV the financing of the project may be from mixed sources, or single-sourced loans in the form of investment, that may

be from a private equity firm or be a combination of different private equity that could be shareholders. Although receiving much criticism in some countries there are also facilitation funds or viability gap funding made available by the governments, to attract private sector participation in PPPs. Although most of the significant responsibilities and risks are transferred to the SPV, the public sector as a purchaser still plays a critical role in providing and specifying clear requirements and output specifications for the infrastructure.

Gardner & Wright, (2021a) concluded the following terms related in PPPs structure.

- **Ownership arrangements**

The terms and conditions of the sponsor's ownership of the project company will be covered under a shareholder's agreement and will codify matters relating to the control, corporate governance, funding ownership, share transfer, and termination of the SPV.

- **Input and sales arrangements**

The creditworthiness of a project will be the input and sales arrangements of the project company. Lenders will ideally wish to have the security of long-term contracted input and sales arrangements containing clear pricing mechanics. The extent to which long-term sales agreements can be structured is industry dependent and projects can be structured with the project company retaining demand risk. Key considerations are as follows.

- a) The tenor of the contracts.
- b) Sales arrangements regarding demand risk, risk under a form of 'Take or Pay' or 'Availability' contract. The project company earns revenues merely for making the goods or services available, irrespective of demand.

- **Stakeholder motivations for project financing**

Project financing is predicated on the equitable allocation of risks between a project's stakeholders through various contractual relationships between the parties. A well-structured project provides several compelling reasons for stakeholders to undertake project financing as a method of infrastructure investment.

- **Sponsors**

PPPs project finance is the long-term financing of infrastructure and industrial projects based upon the projected cash flows of the project rather than the balance sheets of its sponsors. The number of equity of investors in PPPs projects are known as sponsors. In a project financing, the project company is SPV, the liabilities and obligations associated with the project are one step removed from the sponsors.

2.1.7 Process for PPPs formation

Ahadzi & Bowles, (2001) states that the whole PPPs procurement mechanism is segregated into four stages i.e., planning and feasibility phase, bidding, and negotiation phase, construction phase, and operation phase, with the possible addition of relocation and renegotiation phase. There are five various types of methodologies that can be used in PPPs tender; open competitive, invited tendering, registered lists, project specified prequalification and shortlisting, and negotiated to tender. Table 2.8 outlines the major steps of PPPs tendering.

Table 2.8: Outline of PPPs Tendering Process

Step/Documentation	Description
Expressions of Interest (EOI)	<ul style="list-style-type: none"> • An open sampling of the universe of potential companies who are in principle interested to tender for the project.
Request for Qualification (RFQ)	<ul style="list-style-type: none"> • A first stage tender document released to all companies which have expressed interest to tender for the project. Respondents are typically assessed on their basic financial and technical abilities to implement the project.
Request for Proposals (RFP)	<ul style="list-style-type: none"> • A second stage tender document released to all companies or consortia of companies that are qualified under the terms of the RFQ. • RFPs are characteristically highly detailed and perspective documents which outline the full financial, legal, and technical bid documents required to be provided by the bidders and terms/conditions of the tender competition.

Bid submission	<ul style="list-style-type: none"> • Each bidder submits its tender documents to the procuring authority on a specified date. • Tender pricing
Bid evaluation	<ul style="list-style-type: none"> • The procurer and its advisors will undertake a detailed financial, technical, and legal evaluation of each bidder's compliance with the tender evaluation criteria specified in the RFP.
Winner bidder selection, final commercial negotiations and 'commercial close' or project arrangements	<ul style="list-style-type: none"> • Assuming compliance with the terms of the RFP, procurers will usually specify price as being the final determinant of the tender competition lowest bidder wins. • Commercial Close represents the finalization and signature of the 'head contract' (the concession contract) and the supporting project documentation such as shareholder's agreements and sub-contracts.
Negotiations of financing documents, signature of financing agreements and financial close	<ul style="list-style-type: none"> • Negotiation of financing agreements (loan agreements and direct agreements) can happen in parallel to the negotiation of the financing agreements, thereby allowing simultaneous Commercial/ Financial Close. • Financial close has been achieved when all 'Conditions Precedent' to the financing documentation have been satisfied and the project company is therefore able to draw down debt to fund construction of the asset.

Source: Gardner & Wright, (2021b)

2.1.8 Functional organization of PPPs

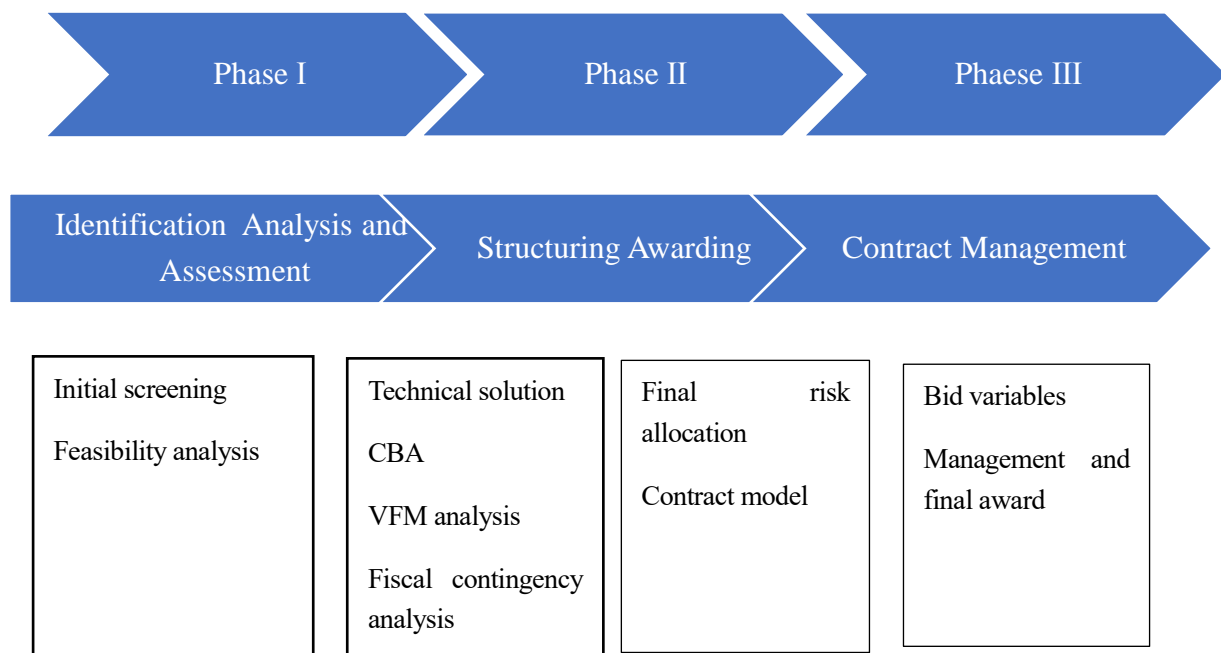
Variety of enabling organizations to have emerged to assist organizations to address the challenges faced by infrastructure PPPs (Jooste & Scott, 2009a). It appears when the organizations work together collectively enable and sustain PPP projects. For this reason, understandings will be advanced by considering how these organizations function in combination, including exploring how these combinations are shaped by their institutional environments (Jooste & Scott, 2009b).

The formation of PPP project assets has a direct bearing on the public interest (Zhou &

Yin, 2018). Based on the theory of public goods and the PPP management movement model. On a conceptual level, and in a simplified manner, the life cycle of a PPPs project consists of three basic phases. Each phase requires the performance of certain functions in the process of PPP design and implementation, which can be carried out by government entities or other organizations.

According to the nature and the country's political and legal frameworks the PPPs projects may varies in the formation of its model. The following figure 2.4 discusses on the basic overview of the functions and the entities/organizations responsible for carrying out the possible functions.

Figure 2.4: PPPs Project cycle Phases and Functions



Source: Prats (2019)

Phase I: The pre-tender phase consists of identifying, analyzing, and assessing the project. The main points relating to the principal factors to be considered at each stage are included. In this stage several tendering performs used by construction organizations are included in a simplified format (Cooke, 1992). The main goal of this phase is to decide to carry out a project through a PPP and, if necessary, the process prioritize among the various PPPs in the pipeline. According to the nature of newly build project and its effectiveness of the project in the society the decision-making process involves several steps.

Phase II: The structuring and tendering phase focuses on project structuring and

procurement. This phase consists of defining the final risk allocation and awarding the contract. Also, the phase II analysis the VFM. VFM analysis is essential, as it determines whether it is appropriate to carry out a given project through a PPPs or not.

Phase III: The post-tender phase concerns contract management. In PPPs procurement this phase plays an important role because of its highly specific functions, such as contract audit, particularly tracking quality and performance indicators, and dealing with potential renegotiations.

2.1.9 Three Levels of PPP Fields

The PPPs fields vary within the country's geography, governance, and political structure. Although the enabling organizations participate in several organizational fields. Generally, there are three levels of enabling organizations: (i) the local field within which specific PPP projects are carried out (ii) the state or federal field within which the enabling organizations operate, and (iii) the wider transnational PPP field that spans national context.

1. Local Project Field

At the most basic level, PPP enabling organizations are involved in developing and sustaining specific PPPs projects in the project locale. At the local level project participants and affected parties are more visible, and therefore the local field is dominated by the broad group of actors, which in addition to the types of PPPs enabling organizations described above, include:

- End-users: In the local level PPPs projects end users are the local citizens that will make use of the PPP assets once they are constructed, whether they pay for the privilege or not (e.g., in local-based tolls, direct subsidies).
- Local stakeholders consist of actors that are in the way affected (both positively and negatively) by the PPP project under concern. In Local PPPs projects, it includes local landowners, residents, and local taxpayers, where impacts range from environmental and social effects to employment opportunities, and even tax implications.
- In local PPPs projects, the stakeholder interests will often be represented by non-governmental organizations (NGOs) or groups mobilized through local social movement organizations.
- Stakeholder interests will often be represented by non-governmental organizations (NGOs) or groups mobilized through local social movement organizations.

- Local governmental organizations include all sub-national/state governmental organizations that affect the work of the public regulatory agencies having specific jurisdiction over the project implementation. E.g., in many cases, PPPs projects will not be subject to local regulatory approvals because they will fall under the jurisdiction of national or state line agencies (such as ministries of transportation, health, and education) as described in the following section. However, most PPPs projects are implemented in coordination with local government agencies including local municipalities, water boards, and health agencies, importantly, in India, still there is a panchayat system as governmental organization in small units. These organizations are even more salient in projects that are implemented solely at a local level.
- Local trade unions are often important players in the local PPPs field. These organizations have historically been quite vocal in the PPPs debate on both sides of the spectrum.

2. National/State Level Field

In most countries, PPPs enabling organizations to operate at a national level. This is sometimes narrowed to states in a federalized system. Although organizations occasionally focus on a single infrastructure sector, the organizational field spans all these sectors at the nation/state level. At the national level PPPs enabling organizations are joined by the following diverse group of salient actors/organization:

- Governmental organizations include all bodies within the nation that plays a role, have a stake, or are impacted by the PPPs projects under concern, in addition to the PPPs enabling organizations. In state-level PPPs importantly, this includes the line agencies or the departments that initiate and take responsibility for these projects. In addition, several departments are involved in providing project approvals, including cases. Overall project approval is centralized under related departments.
- Private for-profit firms include those influencing the PPPs projects themselves (including developers, lenders, financiers, designers, contractors, and operators), and those that are indirectly involved with current projects (such as various service providers) or hope to participate in future projects.
- Local normative organizations provide input to PPP projects based on concern for values such as environmental protection, health standards, and equity

considerations. These include research and academic organizations and professional associations.

- Government agencies: it includes all bodies within nation that play a role, have a stake, or are impacted by the PPP projects under concern, in addition to the PPP enabling organizations. Most importantly, government agencies include the line agencies or departments that initiate and take responsibility for these projects. Similarly, various other related departments are involved in providing project approvals, including cases overall project approval is centralized under departments such as the ministry of finance.

3. Transnational PPP field

Scholars of environmental politics conceptualize transnational PPPs as being driven by “the deliberate pooling of authority, competences, and resources from both the public and private spheres” (Andonova, 2010). Transnational PPPs have become a popular theme in International Relations (IR) research. These partnerships constitute a hybrid type of governance, in which nonstate actors co-govern along with state actors for the provision of collective goods, and thereby adopt governance functions that have formerly been the sole authority of sovereign states (Schäferhoff, Campe, & Kaan, 2009). Transnational PPPs projects are not easy and are riskier than others, but with increasing globalization, they are becoming more relevant (Baxter, 2019). In addition to the local and national fields PPP enabling organizations to operate in a wider transnational field of organizations together to form the global PPP market. The term transnational is used rather than global to indicate that this field does not necessarily include all nations, but rather those that have an active PPP market.

The primary actors in this field are as follows:

- International Consulting firms supply international experts that work at multiple levels, including the local level, and serve to convey information and best practices through professional networks.
- For example, International infrastructure design, construction, and development firms (often connected to the for-profit firms in the local PPP field) work on PPP projects in various countries and bring with them the technical, financial, and negotiating skills and experience needed to execute the PPP assignment.
- According to Djelic & Andersson (2006), International NGOs are very active at the trans-national level, applying normative controls through mechanisms such as

“naming and shaming” campaigns via the media, voluntary audits, and peer controls and often activated by the local counterparts to participate in PPPs project developments.

- Professional associations and research and academic institutions also apply the cognitive framework and normative controls through standard-setting, educational program, and professional forums for information sharing.

4. Other field components

The above discussion highlights the primary types of actors that are found in the three fields within which PPP enabling organizations are located. According to the researchers, the above-mentioned fields can also be elaborated by utilizing the other four elements, a) Governance arrangements, b) Institutional logic, c) Intermediaries, and d) local activities.

The four elements are discussed below:

- Governance arrangements: PPPs are a sub-set of the tools of government-institutional arrangements through which public policy is mediated. The status as instruments of the public interest, yet bodies that actively engage private actors (Skelcher, 2010).
- Institutional logic: Institutional logic “are the cognitive maps, the belief systems carried by participants in the field to guide and give meaning to their activities” (Scott et al, 2000). While public leaders are highly sensitive to the election cycle and often concentrate on objectives. Public leaders attend to shared beliefs and public sentiments, and most attempt to comply with widely shared norms regarding the legitimate role. Governments stress conformity to rules and procedures and often emphasize transparency and the use of structures fostering wide information sharing and participation from affected parties.
- Intermediaries: Sometimes most of the new types of actors in the PPPs field act as intermediaries among the main players. The activities between the primary organizations-government agencies, project firms, local stakeholders, and end-users- a growing collection of information brokers, advisors, consultants, and watchdog organizations have arisen for the process. The most prominent intermediaries at the transnational level are

the regional and multilateral development agencies.

- Local partners: Local PPPs projects in sense-making activities arise in the project field as the diverse player's coverage around the local project and start to interact. Some players come from distant locations and bring with them beliefs and practices shared from earlier projects.

2.2 PPPs Models

PPPs come in a variety of forms and no two PPP projects are the same (Williams, 2003). Given the different implications of different forms of PPPs, the development of such partnerships should be done with adequate preparation and assessment to choose the best option for a particular project. According to various researchers and PPPs related research organizations, there are several types of PPPs arrangements and several classifications. In the current context the most widely used PPPs is the one adopted by the EU. As of EU definitions PPPs projects splits into two different types: institutional and contractual.

Institutional PPPs: Institutional PPPs mean a joint venture between the contracting authority and the private partner in which both parties jointly own shares in a legal entity whose sole purpose is the delivery of specified infrastructure and services. Where the public and private sectors are shareholders of a third entity, often specifically created for the project. The management of this entity is usually under the responsibility of the private sector, although different frameworks are possible.

Contractual PPPs: The public and private sectors are engaged through a contract. The contract specifies the responsibilities, rights, and obligations of each party, and determines the level of service be provided through an investment plan. According to several research papers and the related scholars, there are several types of used PPPs models around the world. Most of them operate in similar ways and the name is differed depending on the country it is used in, whereas in some cases there are major differences in the approach. Some of the commonly mentioned PPPs models have been listed in table 2.9 and the related characteristics are discussed in table 2.10.

Table 2.9: Models of PPPs

Acronym	Designation
BOM	Build-Own-Maintain
BOO	Build-Own-Operate
BDO	Build-Develop-Operate
DCMF	Design-Construct-Manage-Transfer
DBO	Design-Build-Operate
DBFO	Design-Build-Finance-Operate
BBO	Buy-Build-Operate
LDO	Lease-Develop-Operate
BOT	Build-Operate-Transfer
BOOT	Build-Own-Operate-Transfer
BROT	Build-Rent-Operate-Transfer
BTO	Build-Transfer-Operate
JV	Joint venture

Source: OECD (2008)

- **Design-Build Finance Operate (DBFO)** – Under the DBFO model, the private sector designs, builds, finances, operates, and/or maintains a new project under a long-term lease. At the end of the lease term, the facility is transferred to the public sector. In some countries, DBFO model covers both BOO and BOOT models (WSP, 2010).
- **Operation and Maintenance (O&M)** - the private company that operates and maintains a publicly owned asset. This is especially common in Mainland China as traditionally most assets are state-owned and large number of projects are owned by states.
- **Private Finance Initiative (PFI)** – PFI is one of a range of government policies designed to increase private sector involvement in the provision of public services. PFI entails transferring the risks associated with public service projects to the private sector in part or in full. The participation of the private sector is judged best to deal with risk, such as construction risk, then these responsibilities should be transferred to the private sector contractor. Where the private sector is deemed less able to manage the project's risks, such as whether demand will be high enough, then a least some of the responsibility must remain within the public sector (Allen, 2003).
- **Build Operate Transfer (BOT)** – This is an effective method for project funding and is often used in India. Because of the many new projects/facilities that be constructed under the BOT model. In the BOT model, after a private-sector contractor builds the facility, they then also operate and manage the facility during a fixed period, after

which responsibility is transferred to the public sector (Chang, Memon, & Imura, 2003). In the BOT model the ownership of the project stays with the public sector, while the private sector partner has responsibility for investment, construction, and operation, and management. There are actual examples in each country, and experiences have also been gained in the BOT projects in India (Phuyal, 2020). Commonly BOT or concession contracts for periods of 20-30 years. For management of the facility to go smoothly during the whole period of the contract, government policy and plans must not undergo major changes. Sudden changes in government policy pose a big risk for the private sector in developing countries.

- **Build Own Operate Transfer (BOOT)** – In the BOOT model, the government grants a franchise to a private partner to finance, design, build and operate a facility for a specific period. After the completion of the project, the ownership of the facility is transferred back to the public sector at the end of the period (Ramakrishnan, 2014).
- **Joint-Ventures (JV)** –The formation of Joint-Venture results in the creation of the new organization, that is formally independent of the parents; control over and responsibility for the venture vary greatly among specific cases.... (Borys & Jemison, 1989). After the 1990s Joint-Venture models are becoming increasingly popular (Lyons M. P., 1991).
- **Lease Contracts-** Under a lease contract, a public utility leases the full operation and maintenance of certain facilities to a private operator for a specific period, for 10 years or more, and grants the operator the right to invoice and collect charges from customers over that time (Grimsey & Lewis, 2013a).
- **Management Contract** – The management contract arrangement confers the maintenance and operation control right to the private sector, but all obligations including project funding, remain with the public sector. In this contract, the public sector retains ownership and responsibility for funding and construction of facilities and entrusts operation and maintenance of existing facilities to private companies.

Table 2.10: PPPs models and characteristics

Types of PPPs	Mode of Entry	Operation and Maintenance	Investment	Ultimate Ownership	Duration (years)
Management Contract	Contract	Private	Public	Public	3~5
Leasing	Contract	Private	Public	Public	8~15
Rehabilitate, Operate and Transfer (ROT)	Concession	Private	Private	Public	20~30
Rehabilitate, Lease/ Rent and Transfer (RLRT)	Concession	Private	Private	Public	20~30
Merchant	Greenfield	Private	Private	Public	20~30
Build, Rehabilitate, Operate and Transfer	Concession	Private	Private	Public	20~30
Build, Operate and Transfer (BOT)	Greenfield	Private	Private	Semi-Private	20~30
Build, Own, Operate and Transfer (BOOT)	Greenfield	Private	Private	Semi-Private	30 and above
Build, Lease and Own (BLO)	Greenfield	Private	Private	Private	30 and above
Build, Own and Operate (BOO)	Greenfield	Private	Private	Private	30 and above
Partial Privatization	Divesture	Private	Private	Private	30 and above
Privatization	Divesture	Private	Private	Private	Indefinite

Source: Hammami et al. (2006a)

2.3 PPPs forms and Modalities

It can be argued that various PPPs forms and models were originally developed because of the needs of both private and public sector organizations. It is argued that corporatization and privatization allowed the private sector to become an important partner in public service delivery systems (Teicher, Alam, & Gramberg, 2006). This section considers a range of parameters that are useful for analyzing partnerships for developing models in the context of private sector generation and economic development. There are variations in partnership dimensions. While trying to capture the richness of various forms of partnerships, this section sets out a range of dimensions to partnerships that can be combined to form a set of characteristics of a partnership.

Mc Quaid (2000) elaborated on the emergence of the various PPPs models and argued that any individual partnership is a combination of five different dimensions. These dimensions include: (a) *what* the partnership is seeking to do (i.e. its purpose and whether it is strategic, or project-driven); (b) *who* is involved (i.e. the key actors and the structure of their relationships in the partnership); (c) *when* (i.e. the timing of stages of development of the partnership process and changing relationships and activities over time); and (d) *where* (i.e. the spatial dimension); and (e) *how* (i.e. the activities are carried out and the implementation mechanisms). Each of these dimensions for analyzing partnerships also has several axes or sub-dimensions. Figure 2.5 illustrates the nature of the partner's involvement in a PPPs arrangement (the Partnership Matrix) based on Mc Quaid's Logic.

Figure 2.5: Nature of Partnership Matrix

What	The partnership purpose/objective				
Who	Allocation of roles and responsibilities for each partner	Key factors in the partnership			
When	What objectives to achieve in each development stage	Who is involved in each development stage	The stage of partnership development		
Where	What objectives to be achieved in each part of the project	Who is involved in each part of the project	When to be involved in each part of the project	The spatial dimension: parts/components of the project	
How	What mechanisms to use to achieve each objective	Who is involved and how is involved	What mechanisms to use in each development stage	What mechanisms to use in each part of the project	The implementation mechanisms
	What	Who	When	Where	How

Source: Compiled by the Author Based on McQuaid, (2000)

According to the McQuaid (2000), partnership matrix, the author has discussed the nature of partnerships as follows:

What is the purpose of the partnership?

In simple language, the purpose of the partnership agreement (or partnership contract) is to establish a business enterprise through a legally binding contract between two or more individuals with legal entities. The partnership agreement itself designates the rights and responsibilities of each partner and the involved entities. The main dimension of forming a partnership is itself with its purpose. The purpose of entering a partnership is to gain extra resources for an area, project, or organization, to release synergy through collaboration and joining various types of resources, or to transform one or more of the partner organizations.

This process allows letting them to act more entrepreneurially by loosening some constraints and introducing new ways of doing things, which are more effective or efficient (Mackintosh, 1992; Hastings, 1996). Overall, the implicit purpose of the partnership is intended to prove the effectiveness and efficiency of the partners and the corresponding environment.

Who is involved?

Mc Quaid quoted the dimension of partnerships, in the range of actors. These include the key agencies; on the government side, it includes the central and the local government, government-funded agencies, voluntary-sector, local community, and the private sector, or partly with significant individuals (Ahlbrandt Jr & Weaver, 1987). In the 'private sector' both the private and the local communities are accepted as essential in forming partnerships.

When?

The third set of dimensions is time. Over time Key individuals may move or change their views and people's and organizational priorities, so their role in a partnership may change. The stage of an initiative or policy at which there is cooperation can influence the balance of power within the partnerships and contributions of partners. Some of the main stages of developing partnerships include the pre-development stage when the nature of the problem is investigated and the need, otherwise a partnership is identified. Some of the main stages of developing a partnership include the pre-development stage when the nature of the problem is investigated and the need, or otherwise, of a partnership is identified. This can be termed as policy formation with agreements focused on the overall aims, specific goals, and implementation mechanisms and, organizational structure, and monitoring and evaluation (Lyons & Hamlin, 1991a).

Where or whom?

While procuring PPPs, projects partnerships focus on different scales of geographical area. Some of them focus on a client group within the area or across a wider area. Most of on national-level policies, such as social exclusion, discrimination, or urban regeneration in a national context, or may focus on such issues at a local or regional level. Partners or other key actors will differ in each situation.

How: Implementation mechanisms

As the fifth dimension of partnerships, Mc Quaid focuses on the implementation mechanisms. The implementation mechanisms involve who does what, including who provides resources and who controls/manages them. The partnership may agree to coordinate and alter priorities of the partner's existing services or, at another extreme, the stand.

2.4 Major determinants for PPPs

According to the ADB, the public infrastructure provision through PPPs is based on two different motives. At first or basic motive, private sectors are seeking profits by providing infrastructure services, secondly, governments are also seeking merits with the projects public nature and economic efficiency through the participation of the private sector (Hyun, Park, & Tian, 2018). Therefore, only Good and publicly affordable infrastructures are key to guarantee profits in both public and private partners further impacts on sustained economic growth and inclusive development (Liddo, Rubino, & Somma, 2019). However, fiscal and budget constraints are likely to restrain public investment in infrastructure. For these reasons, PPPs are increasingly playing a crucial role in infrastructure development at a global level. To derive successful and effective partnerships, the public and the private sector share the same common goal of quality, efficiency, and accountability in building infrastructure and delivering services. However, the factors and the roles affecting PPPs attraction are still understudied. This section aims to identify the impact that non-financial factors, such as governance and regulatory quality, play a crucial role in determining PPPs investment.

2.4.1 Government Fiscal Constrains

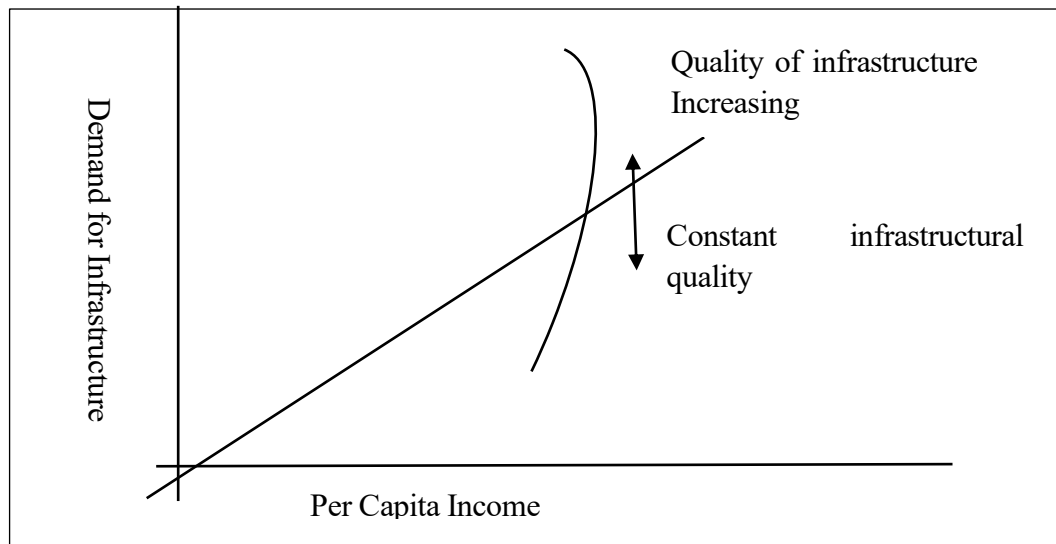
PPPs type arrangement suits more to those countries where governments have resource constraints and a considerable infrastructure gap (Sharma, 2012). The government budget constraint is an accounting identity linking the monetary authority's choices of money growth or nominal interest rate and the fiscal authority's choices of spending, taxation, and borrowing at a point in time (Leeper & Nason, 2010). In the case of developing countries monetary borrowing is the source of some fiscal financing. The government budget constraint tries to serve to link on monetary and fiscal choices to expected future monetary and fiscal policy variables. This dimension of fiscal constrain creates a rich set of possible impacts of routine macro-economic policy actions, as current or future policies can be expected to adjust to satisfy the government budget. The primary function of the government is to provide necessary and adequate infrastructure to the public. Unfortunately, almost in every developing country, there exists an infrastructure deficit (Kumar, 2019). It means that *what is needed* and what *the government can provide* as far as infrastructure is concerned. Government's fiscal constraints have intended to force low-income countries to be opting for PPPs infrastructure (Amovic, Maksimovic, & Buncic, 2020). PPPs arrangements allow the public sector to consider unaffordable projects. It helps to fill the gap between the government's afford and people's need (Hammami et al., 2006b). PPPs thus allow the public sector to leverage more financial resources by using the private sector as an intermediary (Kopp, 1997). Taking the government budget to constrain seriously can

overturn some widely held beliefs about policy effects.

2.4.2 Market Conditions

The demand for services from the local people is one of the most influential factors in attracting private investment in the infrastructure sector. Likewise, the demand for infrastructure is positively determined by the market conditions. The population is one of the most important demographic factors determining investment in infrastructure. According to Heller, (2010a) population is one of the most important demographic factors determining investment in infrastructure. Heller argues that the demand for infrastructure is positively correlated with population and its income.

Figure 2.6: Per-Capita Income and Infrastructure Demand



Source: (Heller, 2010b)

From figure 2.6 it indicates that in short income levels and small portion of economic activities influence the demand for infrastructure. If there is a significant poverty, low-income groups users may not be able to afford even the minimal payments required to cover the marginal cost of supply. Heller (2010) stresses such demand-side constraints may make difficult to recover costs for new infrastructural investments in low-income countries in low level of subsidies. Hence, low income countries like India, quality differentials exist in infrastructure.

2.4.3 Macro-Economic Conditions

Microeconomic theory and the evidence accumulated in case studies there are only a few empirical studies on the economic impact of PPPs. With limited available data, attribution or causality cannot be easily drawn out of macro-level analyses. Some micro-level analyses use quasi-experimental approaches to estimate the effect of infrastructure PPP projects on welfare measures, including for poverty reduction. Macro-economic stability is one of the most important economic factors in determining the private sector investment in the infrastructure sector. The private sector investment requires a certain indemnity over their investments. The fiscal and monetary policies may create positive macro-economic stability in the country (Nagesha, 2015).

2.4.4 Sustainable Development

The rationale of PPP projects is to provide value for money, deliver high-quality outcomes, and complete projects within time and budget. And sustainable development is defined as “development that meets the needs of the present demand without compromising the ability of future generations to meet their own needs” (WCED, 1987). According to the new agenda, entitled “Transforming our world: the 2030 Agenda for Sustainable Development” was agreed by the 193 United Nations Member States during the Sustainable Development Summit, which was held at the UN Headquarters in New York on 25-27 September 2015 (Zapatrina, 2016). Committed to the Sustainable Development Goals (SDGs) countries around the world pledge to pursue progress on economic, social, and environmental targets in a balanced and integrated manner. The target of SDGs is ambitious, and it requires a shift in how the partnership works. The target itself push significantly to both public and private sector to invest in all countries. There is a necessity to mobilize private sector investment and innovation to support the SDGs.

According to Neil, (2007) sustainability in PPPs is seen as a three-dimensional concept that includes a social, ecological, and economic perspectives. Also, these three dimensions are called “three-pillar” or “triple bottom line” and are popular in many policies and assessment methods and mostly fit in with “technological optimism” and “trickle-down” theories (Hueskes, Verhoest, & Block, 2017). PPPs for sustainable development has been in operation for several decades from the local to the international level (Marx, 2019). This is concluded by the so-called shift from ‘government’ to ‘governance’, signaling that governments are no longer the only providers for public policy (Rosenau, 1995). According to the SDGs. goal 9, Industry, Innovation, and Infrastructure Build resilient infrastructure, promote inclusive and sustainable industrialization, and foster innovation.

2.4.5 Private Finance Initiative

The Private Finance Initiative (PFI) was firstly launched in the UK in 1992 to encourage the private sector to become more involved in the provision and enhancement of public services (Wall & Connolly, 2009). It was justified on the basis that the schemes offered value for money, appropriate risk allocation (Broadbent & Laughlin, 1999) and that the private sector would be more cost-effective in the design, construction, and subsequent operation of many public sectors projects. The long-term buyer and supplier relationships in public and private sectors are PPPs and PFIs which bring together public and private organizations in under an umbrella. These long-term relationships build the context of the case study.

2.4.6 Privatization

PPPs are mid-way houses between fully public and fully private ownership (privatization) and provision services. Privatization normally involves with-drawl of the government in favor of market-based operations while the government continues to be engaged with the PPPs operator.

Privatization is defined broadly as relying more on private institutions of society and less on the government to satisfy people's needs. Privatization acts as the reducing the role of government or increasing the role of other institutions in producing goods and services and in owning property (Savas, 2003). The private sector has always been involved in the building and maintenance of infrastructure projects, whether they come in the form of PPPs or traditional public procurement. Additionally, it could be said that PPPs, models are assets and are not sold to the private sector (Monk et al., 2019). Only the private sector is simply responsible at risk for service provision.

According to the above discussions the crucial differences between PPPs and Privatization are discussed in following:

- PPPs generally involve only the right to use the assets and not the sale or transfer of ownership of physical assets.
- Under a PPPs, accountability for the provision of the service rests with the public sector, with a contract setting the terms of the relationship between the government and the private sector. A healthy PPPs contract helps the government retain oversight and control over all crucial parameters of performance and outcomes, making payments against services delivered. In contrast, privatization usually implies, transfer of immediate accountability for providing the service to the private provider (Farquharson et al., 2011).

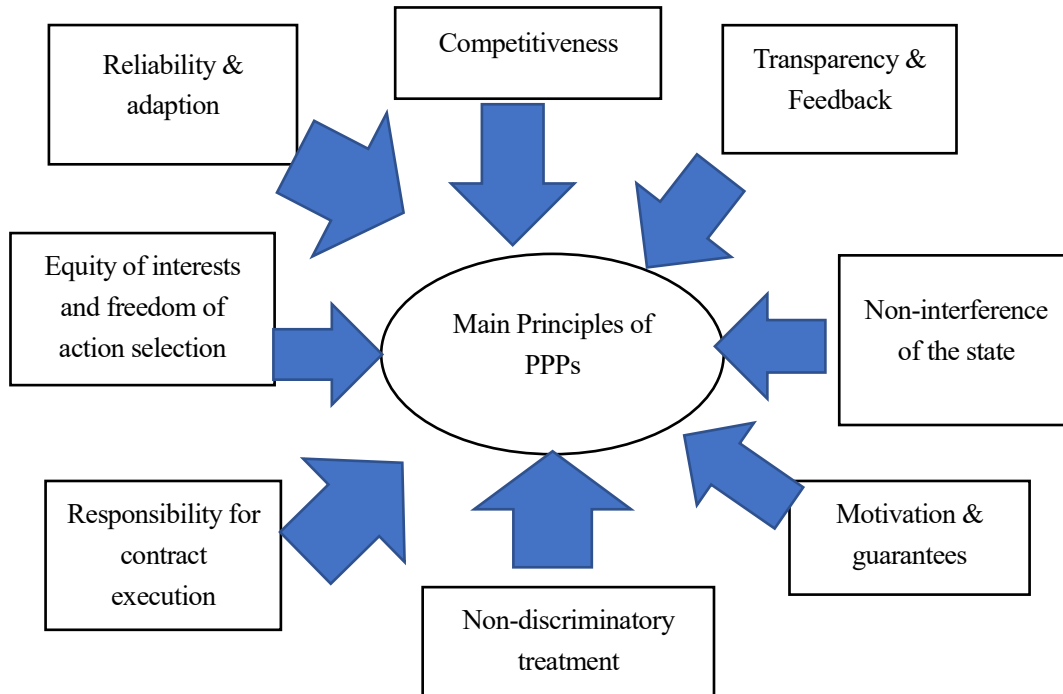
- In a PPPs model, the government retains a vital role as the purchaser of infrastructure services; ultimate service provider if the private sector exists the project; or to which the assets revert after the concession period (Pratap K. V., 2011).
- PPPs contracts are for limited contracts and are usually for 15-30 years or more, which is not case with the privatization. Privatization involves the withdrawal of the government in favor of market-based operations for an indefinite period.
- Public policy and Public planning play an important role in PPPs. For example, it has been estimated that required infrastructure investment in India.

2.5 Public-Private Partnership: Principles and key Characteristics

2.5.1 Principle of PPPs

The theoretical underpinning of the concept of the PPPs can be traced to the theory of x-efficiency developed by Leibenstein in 1966 (Hammami et al. 2006c). The idea was based on public institutions or enterprises cannot fail as long as official financial and monetary policies are expansionary enough to bail them out to limit the PPPs are characterized by long-term cooperative and legal relations established between the public and private sectors to plan, design, finance, build and manage the projects that belong to the domain of public services (Petković, Nègre, & Lukić, 2015). A key feature of PPPs is cooperation, as the ability of people and organizations from the private and public sectors to work together and combine what is best from these sectors and achieve multiple benefits by joint actions (Holland, 1984).

Figure 2.7: Main Principles of PPPs



Source: Vecchi, Caselli & Corbetta (2015)

Among the main principles of PPPs, the key principles are discussed below.

- **Competitiveness:** The principle appears on the stage of the competition for the signing of the PPP contract with the state. The fair competition among private companies for participation in the PPPs project allows the state to choose an effective partner and reduce the costs for the whole project.
- **Transparency:** Despite the centrality of transparency in most donor strategies as well as in the multiple studies and mappings of these strategies, the definition and use of the term transparency differ somewhat depending on the user and its purpose. Further, United National Development Program UNDP 2015, states that PPPs are transparent for all participants. 1) Have access to the same information about the project 2) comply with the same minimum requirements 3) be prohibited from involvement with those awarding the contract 4) be prohibited from collusion with other bidders, and 5) be bound to their proposal and not be able to change it after the contract is awarded (Bruce et al., 2016).

- **Motivation and guarantees:** The governments use an extensive system of motivational incentives to encourage private companies to participate in PPPs projects. E.g. co-financing subsidies from the budget, preferential tax treatment, special customs regimes, profitability guarantees, loans, supplies, procurement, reduction (cancellation) of concession fees, rental payments, etc. Thus, PPPs guarantees are understood in a broad sense and are not confined to financial ones.
- **Accountability:** Accountability has long been recognized as the cornerstone of successful public management. In an environment of proliferating partnerships, the tools of government needed to maintain accountability are not the same as those needed for insular agency activities. stresses that “government’s performance is only good as its ability to manage its tools and to hold its tool users accountable” While assessing the level of accountability in PPPs Fombad (2014) presents three different aspects to take into account when assessing the level of accountability in PPPs.
- **Equity of interests of the parties and freedom of action selection:** This is a basic principle of the market economy and is manifested in the PPP projects in several aspects. According to Vechhi, 2015 it implies, “firstly the equality of all participants in access to services provided by private companies in the field of public services, Secondly, the equality of all private enterprises in the right to enter into PPP contracts, thirdly, freedom of the partners to choose the form and methods to achieve goals of the partnership.

2.5.2 General Characteristics of PPPs

From the table 2.7, 2.8, 2.9 and figure 2.6, it has already cleared that the PPPs have various types of models and characteristics. The models of PPPs vary from country to country. The concept of PPPs is evolving in various ways in each country in which the arrangements are being implemented. Some countries have a central government dealing with PPPs, (e.g., the Netherlands) some do for applications (e.g., the UK) while others leave it to individual states or municipalities (Australia, United States). India is experimenting with different systems for the GoI central government and the State government has an administrative framework governing PPP-type private concession. According to Grimsey and Lewis, (2013b), the most important characteristics of PPPs are discussed below.

- **Participants:**

A PPPs model fairly involve two or more parties and at least one of them has to be a public entity. It is necessary that both sides the public and private sector needs to be principal, capable of negotiating and contracting on its behalf. Both participants must make an organizational commitment to the partnership.

- **Relationship:**

A government department ordering sandwiches each day for lunch from the same catering firm does not create a partnership (Kelly, 2000). Partnerships need to be enduring and relational. Governments buy goods and services, provide grants, and they impose fines and taxes on the consumers. Researchers claim that only buying and taxing transactions never imply any real continuity of behavior. Even if a public sector body were to use the same supplier year after year, this pattern would not be regarded as a partnership.

- **Resourcing:**

Each of the participants brings something of value to the partnership. PPPs seek to draw on the best skills, knowledge, and resources, whether they are in the public or the private sector and deliver value for money in the provision of public infrastructure services.

- **Sharing:**

PPPs involve a sharing of responsibility and risk for outcomes in financial, economic, environmental, or social in a collaborative framework. This mutual responsibility contrasts with relationships between the public and private sectors in which the public body retains control over policy decisions after getting the advice of private sector entities.

- **Continuity:**

Underpinning the partnership will be a framework contract, which sets out the ‘rules of the game’ and provides the partners with some certainty. It enables the parties involved to make decisions without having to start from scratch each time and develop from first principles the rules that govern these interactions. Whilst the PPP contract itself is ‘incomplete’ and does not specify all components and allow for all outcomes. There must be shared values, a common understanding of priorities, and a good measure of trust.

2.5.3 Comparing PPPs enabling fields

The preceding discussion presents the kinds of actors and processes that may characterize the organizational fields that surround PPPs enabling organizations. In surveying the current scene significant differences internationally in the composition of the National/State level field. For this reason, three contemporary examples of state level.

Selected example for PPP enabling fields

To illuminate the divergence of PPPs enabling fields, three contemporary examples: South Africa, Brazil, and the Republic of Korea is presented. Although these countries and the governance of PPPs are not archetypes of typically filed compositions, these cases provide a useful indication of variations in the types of players and configurations to be found in diverse regions.

❖ South Africa

In South Africa “South Africa National Treasury PPP Unit” is responsible for PPPs development, management, and monitoring. South Africa remains one of the regions in the world with a significant infrastructural deficit, both in economic and social aspects. PPPs are widely used as a means of leveraging the skills, expertise, and resources of the private sector to mutual advantage, are similarly adopted by South Africa to support public sector delivery (Walwyn & Nkolele, 2018). After 1994, South Africa took place in a democratic election and gradually shift the policy from “government” to “governance”, and new mechanism such as concessions, PPPs and privatization emerged in the second half of the 1990s (Burger, 2006). There is growing availability of guidance on PPPs procurement processes, legality, and governance.

❖ Brazil

Brazil has recently passed a new national PPP law that applies to all levels of government and all entities/enterprises controlled by governments within Brazil. This law sets out the main guidelines to be followed in developing PPPs, the broad types of activities possible under PPPs; sets of clauses that PPPs contracts must include; the bidding process required for procuring PPPs; the creation of an agency, under the Ministry of Planning, Budget and Management, that establishes procedures for contracting out PPPs and a requirement for contracting entities to estimate the costs of PPPs and to ensure that these costs are consistent with multi-year budget plans and relevant legislation on fiscal costs and do not lead to breaches of budgetary plans and relevant fiscal legislation (World Bank, 2006). Considering the need for additional sources to complement the gap for investment in economic and social infrastructure, Brazilian governments at federal, state, and municipal levels have also acknowledged the immediate private funding for long-term projects as an

important investment alternative (Alencar Liola, 2013). Brazil becomes a naturally important case study for regulation about PPPs in infrastructure for a specific reason. In the period 1990-2001, Brazil stood out amongst all the developing economies as the country with maximum investment commitments in PPPs projects in Infrastructure. The Brazilian government has attempted to increase upfront funding for

❖ Republic of South Korea

South Korea has achieved one of the fastest economic and social development in the last five decades (Tafesse, 2014). At the beginning of 1990s, South Korea began to experience a serious shortage of infrastructure facilities, like roads, railways, airports, etc. The government of South Korea had come to recognize the potential of the private sector to work with the public sector as an alternative means of replenishing infrastructure. Then given inducing the private sector to participating in the construction of infrastructure facilities, the government began to push for PPP projects in August 1994 by an enactment of the Act on Promotion of Private Capital Investment in Social Overhead Capital (SOC) (Kim, et al., 2011). As the ‘infrastructure gap’ was regarded as a bottleneck for economic growth, the PPP system was introduced by the August 1994 Act (Park, 2012).

2.5.4 Attractive Factors for PPPs

Many governments across the globe are practicing PPPs policy but the question is ‘why do they prefer the PPPs approach in procuring public infrastructure projects?’ (Osborne, 2000b). This section considers some of the arguments in favor of forming and implementing economic-development policies through partnerships.

The motivation to adopt PPPs seems to differ according to the countries socio-economic and political conditions. The very first PPP projects that opted for this approach were simply to bring in private investment for public services and facilities. Regarding the researchers, most developing countries accept the PPPs policy as a condition on loans from international organizations (Jamali, 2004; Thomas et al. 2006). While other researchers raise the argument that PPPs alleviate poverty in their countries (Robert et al., 2014). PPPs bring essential public benefits in the local region where the project is built or service is delivered. Employment opportunities in the local regions are enhanced where local people can be engaged during the construction and operational stages. The private investor is also best known to provide technological innovation and employ several methods and means of providing facilities and services at a reduced cost.

- In general, the private sector possesses better mobility than the public sector. For

example, the private sector is not only able to save the costs of project in the planning, design, construction, and operation, but also avoid the bureaucracy and relieve the administrative burden.

- Service quality, using contracts, the public partner can specify and regulate the level of service quality to be offered to the public. The private sector also carries special expertise and technological skills, that will result in improved service quality. Additionally, the use of competition in operations may create even more incentives for improved quality utilizing entrepreneurial development and innovation.
- The government sector always lacks the ability of raise massive funds, mainly in developing countries. Therefore, for the massive fundraising for the large-scale infrastructure projects, only private participation can mitigate the government's financial burden.
- Risk sharing in PPPs projects is designed so that each specific risk associated with the projects is borne by the partner best suited to handle the risk.

Cruz & Marques, (2013) summarized eleven advantages of PPPs, which are discussed below:

- **PPPs are oriented toward satisfying global needs:**

Most of the PPPs projects are established for the provision of public services to the citizens. Providing transportation, water, waste, health care, security, energy, and education are the relevant projects. The services provided by the government or private sector aims to satisfy the needs of the population and can be observed as services of great public relevance and as fundamental for economic and social cohesion.

- **PPPs involve long term relationships:**

PPPs projects involve large and sunk investments. To allow the concessionaire to recover these investments and obtain its profit rate it is necessary to have long term relationships. The common time-period is 30-years of duration. e.g., PPPs in Delhi International Airport, the estimated time duration is from 2006 to 2036 (DIAL, 2006).

- **PPPs involve total or partial financing of the project:**

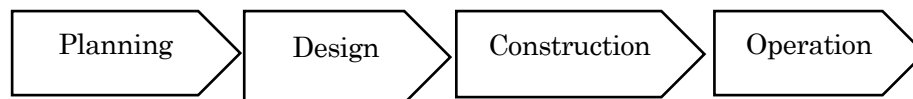
To foster efficiency of the infrastructure project, the concessionaire needs to have incentives. These incentives can be linked to performance-based compensations and, indirectly, through value at risk.

- **PPPs are oriented towards results:**

The success of the PPPs project is measured by its results. A good PPPs model is focused on the outputs and the maximum efficiency to achieve those outputs.

- **Bundling several stages of the project:**

The design, construction, and maintenance of large infrastructure such as roads, hospital, water-dams, or airports is an extremely complex process and is highly vulnerable to cost and time deviations. Bundling all project stages can result in synergies and cost efficiencies. The planning stage involves all preliminary studies (cost benefit analysis) as well as a large draft of the project features. The design involves the technical specification of the project at a level that will allow construction. The construction involves all related activities and generally takes 2-3 years depending on the complexity of the project. The stage includes tests and quality certification of the infrastructure and its components. Final stage is operation stage. It includes construction, maintenance activities, infrastructure improvements and increases of capacity.



- **Enhances innovative solutions:**

Usually, PPPs provide an opportunity to the government to undertake larger projects that previously would have been broken up into smaller projects under conventional procurement methods (Devan, 2005b). This is one of the main objectives of the PPPs arrangements. When the concessionaire has the proper incentives, the project may be able to deliver innovative and higher value solutions.

- **Allows a life-cycle cost perspective:**

The adoption of the PPP model allows for having a full life-cycle cost perspective. One of the problems found in many large infrastructure investments is the poor accountability. When the bidders prepare their proposals, they are committing themselves for a very long period and, try to obtain the most accurate estimates of costs. By bundling the several stages of the infrastructure, the PPP model accounts for the whole life-cycle costs and for assigning the corresponding responsibilities of the different actors.

- **Allows for more effective control of costs and deadlines:**

One of the main rationales of PPP adoption is the idea that the private sector can control costs and deadlines more effectively than is achieved by traditional procurement. The above sections have already mentioned that it is necessary that the private sector is entrusted with significant risks, particularly those related to construction. The private sector is the main, or the only, sector responsible for the construction risk. Construction cost overruns are well known all over the world. Traditionally, public work contracts cost significantly more than expected, usually without compliance with deadlines (Flyvbjerg, Holm, & Buhl, 2003).

- **Attracts more competition at a global level:**

The implementation of PPPs on social infrastructure has been done by several countries. Due to the character of PPPs whole life-cycle PPPs tendering are larger than the public works tender. Having larger tenders, in social infrastructure more large and multinational companies become more interested. Considering that the purpose is to ensure the highest levels of efficiency, this will be an advantage because there will be greater competitiveness (the global market is always larger than the local market).

Additionally, Askar & Gab-Allah, (2002) summarized eight advantages of PPPs in their research paper:

- The use of private sector financing to provide new sources of capital, thus reducing public borrowing and improving the host government's credit rating.
- The ability to accelerate the development of projects that would otherwise have to wait for scarce sovereign resources.
- The use of private-sector capital, initiative, and know-how to reduce project

construction costs and schedules and to improve operating efficiency.

- The allocation of project risk and burden to the private sector that would otherwise have to be undertaken by the public sector.
- The involvement of private sponsors and experienced commercial lenders, providing an in-depth review and additional assurance of project feasibility.
- Technology transfer, training of local personal, and development of national capital markets.
- In contrast to full privatization, the government's retention of strategic control over the project, which is transferred back at the end of the contractual period.
- The opportunity to establish a private benchmark to measure the efficiency of similar public sector projects and thereby offer opportunities for the enhancement of public management of infrastructure facilities.

2.5.5 Negative factors for PPPs

The development of PPPs arrangements has been far from a perfect model. The PPP models are typically complicated models, poorly designed contracts, and eventually to the delivery of services. Sometimes hoc renegotiations become inevitable and result directly from the lack of preparation of public authorities (Engel et al., 2009). These renegotiations take place during the contract period, that there will be only one price, the one presented by the private partner, without any competition and with profit margins that may be, and generally are. The companies competing for the contract sometimes plan to engage in abusive behavior expecting to reach their desired levels of profitability during renegotiations. Although PPPs is perceived as a way of creating public infrastructure at little or no cost to the public purse, it is still the notion that “there is no free lunch” is true (Kumaraswamy & Zhang, 2001).

- **Political risks**

Political risks indicate the commencement of risk arises due to change in the governing body of a country and therefore poses a risk to the investor who investments in financial instruments like debt funds, mutual funds, equity, etc. (Thakur & Vaidya, 2020). These

risks are arising from wars, civil disturbances, terrorisms etc., and include currency transfer restrictions, expropriation, war, and breach of contract. Political risks are more serious in certain regions of the world than in other (Salim & Pantaleo, 2017).

- **Market risks**

Market risks refer that arise due to uncertainties about the market demand for the infrastructure service. For example it includes Volume risks that relates to uncertainties arising from the number of users and their frequency and intensity of sue of the infrastructure service-and price risks, that arise due to uncertainties in the tariff that can be charges for the use of the infrastructure service. Thus, market risks are closely linked to the user's appetite and ability to pay for the services.

- **Lengthy bidding process**

PPPs procurement in infrastructure projects takes longtime than numerous traditional types of procurement imported into the construction industry. From initial phase of public sector assessment to signing of contract takes up to two years. The process of inviting, preparing, assessing, and refining bids and negotiating contracts is complex and procedural. It may vary with the countries policies, rules, regulation, and nature of projects.

- **Higher Cost of Capital**

In the macroeconomic theory, there is no safer borrower than the state should therefore always be able to get the best interest terms available when additional funds are necessary to finance a large-scale project. Private firms also need extra compensation for bearing some of the financial risks associated with a large project. Whilst, PPPs projects often include the total or partial financing of infrastructure. This is attributable to the fact that with public debt, the risk is spread over the entire society, which is why public borrowing is usually perpetuity, with the debt being rolled over (Das, Papaioannou, & Trebesch, 2009).

- **Complicated contracts and hold-ups**

While summing up with PPPs there is Hold-up problems. It occurs when the un-anticipated events lace the contractual relationships outside the self-enforcing range. This happens because all the actors in a PPP are ignorant because one actor deceives the other actors by providing incomplete or distorted disclosure of information (Klein, 1996).

- **High Transaction Costs**

PPPs projects have high transaction costs because they require highly skilled professionals and a continuous management of the partnerships from the public sector side. In mega PPPs projects the value of transaction costs is small when compared with the total expenditure, but in local PPPs arrangements this can be a barrier to the development of successful partnerships.

- **Reduced Flexibility with long-term contracts and lock-ins**

Many PPP projects presume long-term commitment from all parties, which may create lock-ins and reduced flexibility. These lock-ins may sometimes be exploited strategically, as in the case of hostage-taking. This refers

- **Lack of complete standards and regulations**

This factor means that the country where the project is located does not possess complete and thorough regulations. However, rule of law and regulation quality are key influence factors for infrastructure PPPs projects (Moszoro et al. 2014).

- **Contractual Incompleteness**

Contractual incompleteness has been one of the main weaknesses identified in PPPs arrangements both at a theoretical and an empirical level. Due to the long duration of most PPPs projects and the complexity of these projects, the probability of events for which there is no contingency plan is very high.

2.5.6 Risk sharing in PPPs

In general, risk is the “effect of uncertainty on objectives”. It is defined as the possible occurrence of negative or adverse effects that lead exclusively to damage or loss (Martins et al., 2011). PPPs activities involve risks in every steps. Analyzing the PPPs risks some authors assume that PPPs have more and a higher degree of risks than other projects because the PPPs projects involves several stakeholders, entail complex project arrangements, some rules regarding financing, documentation and taxation or lack of experienced partners (Rybnycek et al., 2020). This is the main reason that the risk management is an area of increasing academic and professional interest.

- **Risk Classification**

Various authors present distinct classifications for risks in PPPs projects. Miller and Lessard, 2001 distinguish several types of uncertainty: the types of uncertainty and risks are discussed below:

- a) **Natural:** geology or weather.
- b) **Market:** interest rate, risk premiums, and exchange rates, among other.
- c) **Country/fiscal:** regulatory environment, contract enforcement, legal and political stability or terrorism.
- d) **Industry/competitive:** demand and competition.
- e) **Technical project:** construction and project management.

- **Risk in International Standards**

Risk management is a structured/methodological approach to managing uncertainties related to the threat of series of human activities including: risk assessment, developing strategies to manage them and mitigating risks using empowerment resource management (Nugraha & Istambul, 2019). The international standard for risk management, ISO 31000, defines risks as the ‘effect of uncertainty on objectives. For this definition, “effect” is any deviation from an expected value, and objectives can have different natures (economic, financial, environmental and/or project (strategic, tactical, and operational).

- **Risk Assessment**

While procuring PPPs in infra project, possible risks could not be ignored. Both the private and public sectors related agents need to be prepared to develop the proper solution to address risk, in most of the pilot projects risk assessment being the first step. According to Hwang et al. (2013) risk assessment is defined by international standards are distinct by three stages: i) risk identification, ii) risk analysis, iii) risk evaluation.

- i. **Risk identification**

Almost all infrastructure projects are overrunning in terms of either time, amount, or even deteriorated quality of projects (Khodeir & Nabawy, 2019). Thus, identification of Infrastructure construction risk is crucial and complex step in every PPPs project. It involves the identification of all possible risks affecting the project. The key objective of

this task is to provide a comprehensive list of any event that could affect the objectives of the project.

ii. Risk analysis

Infrastructure projects, characterized as being large-scale, long duration and high investment with several risks. Different risks occur in different types of risks occur in different stages if infrastructure projects and these risks influences schedule, quality, cost, environment and safety thereby causing substantial losses or heavy casualties (Zou, Zhang, & Wang, 2007). Risk analysis is about understanding the nature of each risk. To evaluate the risk, it is necessary to know the consequences of the potential risks, the impact on the project and the likelihood that the risk will take place. In most the developing countries there is lack of data and sources about the project nature. Therefore, in risk analysis process it could be the difficult task to overcome weak issues.

iii. Risk evaluation

Risk evaluation is the third and last step in risk assessment. It involves looking at each risk and its consequences and determines whether the risk should be accounted for in the project. This implies defining risk criteria, knowing which risk requires particular attention and possibly, mitigation measures (kamali et al., 2018).

2.6 An International experience on PPPs

Although the development of PPPs has a long history, the expansion of the concept as we know it today started in 1992, when Great Britain introduced the Private Finance Initiative (PFI). There is a great variety of definitions for PPPs available worldwide. The contents and objectives also vary according to the country-specific background such as political, social, and specific interests. Some academic and industrial practitioner defines PPPs as being very ambiguous. Historically, PPPs are an ancient phenomenon, they were not studied seriously by scholars until the late 1980s. Since the 1980s, the reform movement in public management has been a global one when they began to be adopted in public administration and management in both developed and developing countries. It has been a topic of political controversy and scholarly debate, especially regarding the advantages and disadvantages in comparison with traditional government-run services and the nature of the partnerships they bring about. Taking an economic development perspective, Sellgren (1990) defines public and private sector partnerships as a scheme with involvement or funding from more than one agency. Also, Sellgren stresses the joint objectives of the bodies and defines partnerships as co-operation between actors where they agree together in certain schemes. Partnerships mainly focus in traditional needs and concern, such as effective public service delivery, as well as newly emerging issues, such

as the growing needs for global public policy processes, especially those that seek to resolve conflict and to maximize the efficiency and effectiveness of relatively new actors in engages service arenas and international development, such as multinational corporations (Brinkerhoff, 2002). While there are other inter-organizational relationship options available, the partnership will be in literature there are several assumptions underlying definitions of partnerships. First, the potential of a synergy of sum form, so ‘the sum is greater than the parts’, Second, the partnership involves both development and delivery of a strategy or a set of projects or operation, although each actor may not be equally involved in all stages. In third, the public sector is not pursuing purely commercial goals, it depends upon the criteria of partnerships are the presence of social partnerships in society (Osborne, 2000b).

According to Holland, 1984 partnership involves cooperation i.e., ‘to work to act together’ and in public policy can be defined as cooperation between people or organizations in the public or private sector for mutual benefit.

The existing literature in Indian PPPs, focuses mainly on the legal aspects of PPPs formation. Relational issues are largely absent in Indian language literature. Whitefield (2010) provided a survey of PPPs around the world, showing how the model has been adapted to the economic, political, and legal environments of different countries in Europe, North America, Australia, Russia, China, India, and Brazil. He also examined the growing secondary market in PPPs investments “buying and selling schools and hospitals like commodities in a global supermarket” as well as the increasing number of PPPs failures, usually because of increased investment’. Indeed, it has been suggested that there is an infinite range of partnership activities as the ‘methods for carrying out such (public-private) partnerships are limited only by the imagination, and economic development offices are becoming increasingly innovative in their use of the concept’ (Lyons and Hamlin, 1991b).

In the case of the emerging countries, the major motivating factors in pursuing PPPs agreement are providing incentives for improved efficiency and performance, enabling governments to enforce contracts by establishing relationships between governments and providers of services, and providing access to skills and technologies from the private sector (World Bank, 2007).

2.6.1 Global Scenario on PPPs

Despite criticisms, PPPs have been continuously used worldwide in the provision of infrastructure services. Based on the several databases of infra-PPPs, numerous countries are currently involved in different stages of PPPs, from design to contract execution. Several countries present varying experience with use and application of PPPs in financing infrastructure projects. In Europe, most PPPs infrastructure financing models are

derivatives of the French concession model and the British PFI models (Oluoch, 2009). In order to support more rapid economic growth and to meet environmental targets, infrastructure investment needs to be substantially increased in many developing and emerging economies (Iossa & Saussier, 2018b). According to the OECD (OECD, 2015), total global infrastructure investment requirements by 2030 for transport, electricity generation, transmission and distribution, water and telecommunications, etc. needs more than 71 trillion USD. This figure represents 3.5 percent of the annual World GDP from 2007 to 2030. The concept of using private capital to provide public facilities has existed for centuries in countries such as UK, USA, France, Spain, and among others (Howes & Robinson, 2005). From ancient Greece and Roman, the great monarchies and republics, people have sought to develop and improve infrastructure as a necessary precondition for the development of all economic activities.

Thus, in recent time several countries have developed PPP program for provision of public infrastructure facilities and services. This has resulted to significant increase in the volume and number of PPP projects across the globe since 1990s. Whilst significant increase in the volume and numerous projects there is not any unified definitions. This has led prior researchers and a several professional bodies and organizations to define the PPPs in various forms. Best practice is applied in both the public and private sectors to learn from others' successful practices.

Considering low and middle-income countries, according to the World Bank Private Participation in the first half of 2019 (H1 2019), private investment commitments in energy, transport, information, and communication technology (ICT) as backbone, and water infrastructure in low-and middle-income countries totaled US\$49.8 billion across 175 projects in 38 countries (World Bank, 2019). Based on the data overview the 2019 investment level show a 14-percent increase over H1 2018, and an 18-percent increase over the five-year H1 average. Where 76% of total investments were concentrated in five countries (China, Brazil, India, The Russian Federation, and the Philippines). Table 2.11 shows the countries with PPPs experiences.

Table 2.11: PPPs Policies in Global scenario

Country	Experience with PPPs
Bulgaria	Since 1989, the relevant legal framework has undergone a series of transformations, which is being influenced by the Bulgarian legislation. The PPP practice under the new concession Act of 2006 has shown good progress.
Croatia	The government's policy is favorable to the use of BOT schemes for Transport, energy, and water. New

	Legislation is designed to facilitate concessions.
Czech Republic	Joint ventures have taken place between public institutions, and private entities in the energy sector, telecommunications and water and wastewater treatment, mainly as a result of privatization. Toll roads have been rejected with two BOT projects not realized. A task force was created in 2000 to develop PPPs in order to complete the road network.
United Kingdom	The British government launched its PPPs development policy in 1992 under the 'Private Finance Initiative'. Since then, the technique has been applied systematically to virtually every area of significant government capital spending in the UK. Partnerships UK was established in 2000 to promote PPP/PFI concepts. It also works on local authority projects.
Canada	Canada defines (PPP or P ³) is a form of Alternative Service Delivery (ASD) that involves a formal collaborative arrangement between the public and private sector in several initiatives. The process is done by pooling resources together to meet a common goal, or simply having the sector focusing on carrying out specific societal responsibilities.
Germany	Germany has no formal PPPs program, although it has in the past involved private sector contractors in road projects. (e.g. the Warnow tunnel), some of which did involve risk transfer to the private sector under a concession framework. A BOT law has been passed, although specific taxation issues complicate the procurement process.
USA	PPP is "a contractual agreement between a public agency (federal, state or local) and a private sector entity [whereby] the skills and assets of each [...] are shared in delivering a service or facility for the user
Japan	In Japan, the Act on the Promotion of Private Finance Initiatives (the PFI Act), enacted in 1999, governs most PPPs projects, referred to as PFIs (Okatani, et al., 2017).
India	Public Private Partnerships (PPP) Project means a project

	based on a contract or concession agreement, between a Government or statutory entity on the one side and a private sector company on the other side, for delivering an infrastructure service on payment of user charges.
China	The partnership between government and the private capital. First stage of PPPs in 1990s.
Brazil	The law authorizing Public-Private Partnerships (<i>Parcerias Público-Privadas</i> or PPP's) was signed by Brazilian President Luiz Inácio Lula da Silva on December 30, 2004. This statute applies to all federal state and local government agencies, special funds, public foundations and state-owned or partially state-owned companies.

Source: Compiled by the Author

2.6.2 PPPs Developing Scenario by countries

In the early 1970s, 80s, the infrastructure facilities were provided through the public sector. Later, the imperatives of global economic reforms coupled with certain limitations such as massive financial requirements, rapidly increasing government debt and infrastructure deficit, inadequate technical competency, need for risk management of the public sector in the provision of these services, necessitated a change in the strategy for the provision of various infrastructure facilities. Among the various alternatives, Public Private Partnership mode emerged as one of the popular models adopted by governments in both the developed and developing countries for eliminating infrastructure related bottlenecks, at the same time, easing the burden on the government exchequer. Countries around the globe are confronting the infrastructure deficits. The developed economies are grappling with the problems of high cost of re-investment to replace or modernize the ageing infrastructure while in developing countries the large and growing gap between infrastructure availability and needs is due to higher growth leading to unprecedented demand for infrastructure services in producing goods and services in maintaining supply and distribution chains efficiency, reliability, cost-effectiveness etc. To narrow the deficits governments have increasingly turned to PPPs models (Kateja, 2012).

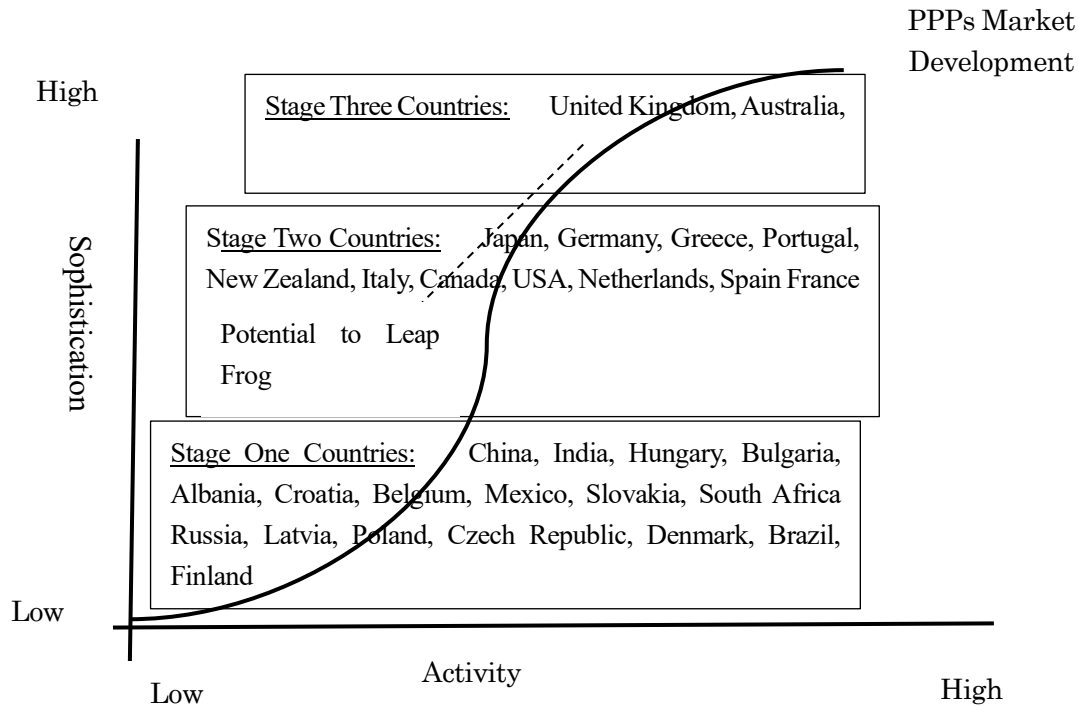
According to Pessoa, 2010 the important factors as responsible for a rapid increase in infrastructure PPPs in developing world. First, the pressure from international organizations, like Washington consensus, which mainly focused on the ten principles including the reorientation of public expenditures and the process of privatization. In this context, World Bank counseled the developing countries to 'use markets in infrastructure provision'. Many developing countries have announced their intention to reform, and a

smaller number have begun to implement changes (Shirley, 1999). Secondly, the massive financial needs of the developing countries for infra investment which could be realized only through private investment in PPPs, given the serious fiscal conditions of governments across the globe.

Third, the potential of PPPs in ensuring an improved quality of services, cost & time efficiencies etc. According to the Deloitte study in infrastructure gap, once offshoot of the rapid worldwide growth of PPPs for infrastructure the countries remain at vastly in different stages of understandings and sophistication in using innovative partnership models.

The three distinct stages of PPPs maturity can be observed across the world (Figure 2.8). Most of the EMEs countries such as India, Brazil, China, South Africa, and Russian Federation are at stage first, in the PPP market maturity curve. In this Initial stage, the countries establish policies and legislative framework along with an institutional set-up to guide the implementation of projects. The governments at early stages of PPPs maturity curve could benefit from the opportunity to learn from the trailblazers who have moved to more advanced stage countries e.g., the United Kingdom for schools, hospitals and defense facilities, Australia and Ireland for roads, etc. Countries in Second stage establish dedicated PPP units in agencies and begin developing new hybrid delivery models. In this stage, the PPP market gains depth and its use is expanded to multiple projects and sectors. For the capital gaining these countries also leverage new sources of funds from capital markets. Countries such as Australia and UK are in the stage three of PPP market maturity curve. In this stage, the countries refine innovative models, use for sophisticated risk models with a greater focus on total lifecycle of the projects and develop advanced infrastructure market with the participation of pension funds and private equity funds.

Figure 2.8 Market Maturity Curve



Source: Deloitte, 2006

Table 2.11 shows the characteristics of countries in three stages. Stage one countries are in first phase of PPPs implementation. seems lack in policies, comparing second and third countries,

Table 2.12: Characteristics of Market Maturity Curve

Stage One	Stage Two	Stage Three
Establish policy & legislative framework	Established dedicated PPP units in agencies	Refine new innovative models
Initiate central PPP policy unit to guide implementation	Begin developing new hybrid delivery models	More creative, flexible approaches applied to roles of public and private sector
Develop deal structures	Expand and help to shape PPP marketplace	Use of more sophisticated risk models
Get transactions rights & develop public sector comparator	Leverage new sources of funds from capital markets	Greater focus on total lifecycle of project
Begin to build marketplace	Use PPPs to drive service innovation	Sophisticated infrastructure market with pension funds& private equity

		funds
Apply early lessons from transparent to other sectors	PPP market gains depth-used in multiple projects and sectors	Public sector learns from private partner methods as competition changes the way government operations function
		Underutilized assets leveraged into financial assets
		Organizational & Skill set changes in government implemented to support greater role of PPPs

Source: Hamilton, 2013

2.6.3 PPPs in Europe

This section highlights the historical context in which partnerships emerged in European Union. As partnerships provide public services privately one may view PPPs as a manifestation of the policy aimed at contracting out the government activities (Urio, 2010). The European countries and the governments around the world have increasingly turned to private sector involvement in the development, financing and provision of public infrastructure and services (Maynard, 1986). From the historical perspective, the emergence of PPPs in Europe is often associated with New Public Management (NPM) (Grimsey & Lewis, 2004). In its origins it is strongly associated with UK Prime Minister Thatcher and US President Ronald Reagan, and with the New Zealand Labor government of 1984 (Pollitt & Dan, 2011). After that European countries and governments around the world have increasingly turned to private sector involvement in the development, financing and provision of public infrastructure and services.

Table 2.13: Applied PPPs Models

Sector	Country	PPP models
Transport	Australia, Canada, France, Greece, Ireland, Italy, New-Zealand, Spain, UK, US, India	DBOM, BOOT, Divestiture
Water, Wastewater, and waste	Australia, France, Ireland, UK, US, Canada, India	DB, DBO, BOOT, Divestiture
Education	Australia, Netherlands,	DB, DBO, DBOM, BOOT,

	UK, Ireland, India	DBFO/M, integrator
Housing/ Regeneration	Urban Netherlands, UK, Ireland	DBFM, Joint Venture
Hospitals	Australia, Canada, Portugal, South Africa, UK	BOO, BOOT,
Defense	Australia, Canada, Portugal, South Africa, UK	DBOM, BOO, BOOT, alliance, joint venture
Prince	Australia, Germany, UK, US	DB, DBO, BOO, Management contract

Source: Compiled by the Author

The table 2.13 is the survey the recent experience with PPPs in Europe. The projects covered include wastewater treatment works, public use motorways, toll roads, power plants, telecommunications, tunnels, school buildings, airport facilities, toll bridges, government offices, prisons light rail systems, railways, parking stations, subways, museum buildings, harbors, pipelines, road upgrading and maintenance, health services and waste management (Grimsey & Lewis, 2013a).

2.6.4 PPPs in Asia

The 21st century is predicted to become “Asian Century” due to its rapidly increasing population and economy (ADB, 2011). According to ADB 2011, if it keeps growing on its recent trend, Asia will account for more than half of global GDP by 2050 (Kawamura, 2020). Similarly, the world’s population is expected to increase by 2 billion persons in the next 30 years, from 7.7 billion currently to 9.7 billion in 2050 (United Nations, 2019).

In these days’ infrastructure needs in Asia are enormous. Several governments are mobilizing additional financial resources and gain access to valuable expertise by structuring projects as PPPs. Asia’s infrastructure-growth is much the same as for other developing regions. Historically, the participation of the private sector in public infrastructure in Asia has its origins in the wave of privatizations of the 1980s and 1990s (Lee et al., 2018). The rationale for formation of PPPs in Asian infrastructure is primarily twofold: to provide new options for public service delivery, and to introduce private sector efficiency and innovation. It has faced with an enormous infrastructure investment challenge over (2010-2020) in order to sustain its impressive economic growth (Abonyi & Abonyi, 2011). Inside the Asian countries the PPPs model is seen by the several governments, investors, and international financial institutions as a critical part of the needed response to this challenge. While some developing Asian countries have far better infrastructure than other, overall, the region remains below the world average in terms of both its quantity and quality (Straub & Hagiwara, 2010).

2.6.5 PPPs in SAARC Countries

South Asia region is mixed region with countries with remarkable economic growth but also with socio-economic problems in procuring Infrastructure projects. Over the past few years, South Asia has sustained a period of robust growth that has lifted many living in poverty and made notable strides in health and education. Table 2.14 shows the establishment of PPPs enabling organizations in SAARC. While comparing the SAARC regional countries India characters a mature model of PPPs procurement. Similarly, other countries are following the path of Indian PPPs policy management.

Table 2.14: PPPs Enabling Organizations in SAARC Countries

Countries	Establishment	Related organization
Afghanistan	2016	Directorate General of Public Private Partnership/ Central Partnership Authority
Bangladesh	2010	Infrastructure Investment facilitation center Public Private partnership Office/ Bangladesh's PPPs Unit
India	1990	Public-Private Partnerships in India, Ministry of Finance Public-Private Partnerships Database India, Ministry of Finance NITI Aayog, PPPs Infrastructure Division (2015)
Nepal	2015	Government of Nepal National Planning Commission PPP Policy
Pakistan	2010 2017	Ministry of Finance (MoF) PPP Launched Public Private Partnership Act 2017
Sri Lanka		Public Utilities Commission of Sri Lanka
Bhutan	2016	Public Private Policy under the Ministry of Finance

Source: Compiled by the Author

Short summary on South Asia Region PPPs and characteristics:

Bangladesh had US\$1.2 billion worth of investment across four projects. An elevated expressway project with financing provided by China Exim Bank, Industrial Commercial Bank of China (ICBC), and the Bangladesh government accounted for US\$800million. China has tried to accelerate progress on major infrastructure projects in Bangladesh after an ambitious schedule was outlined in 2016.

The investment in India dropped to US\$1.8billion, a decrease of 62% from the first half

of year of 2019 levels. Transport continued to dominate investments in the country despite the sector taking a hit by 2020 Covid-19 pandemic. There are three airports concessions in the country, representing the first round of airport privatization selected for major cities nationwide. In the first half -year of 2020, however, investment details were only available for one of the three projects.

Pakistan became one of the five countries with the most investment in the first half-year of 2020, due to a US\$ 1.9billion mega coal power project with 1,329-megawatt (MW) capacity. The coal power project was developed under the umbrella of the CPEC.

The government of Bhutan is recognizing the important role of the private sector in implementing infrastructure projects. In March 2016 PPP policies has approved during the 98th session of the Lhengye Zhungtshog. The PPP policy provides a structured, transparent, and institutional approach to infrastructure development in Bhutan (Royal Government of Bhutan, 2016).

2.7 PPPs in developing countries

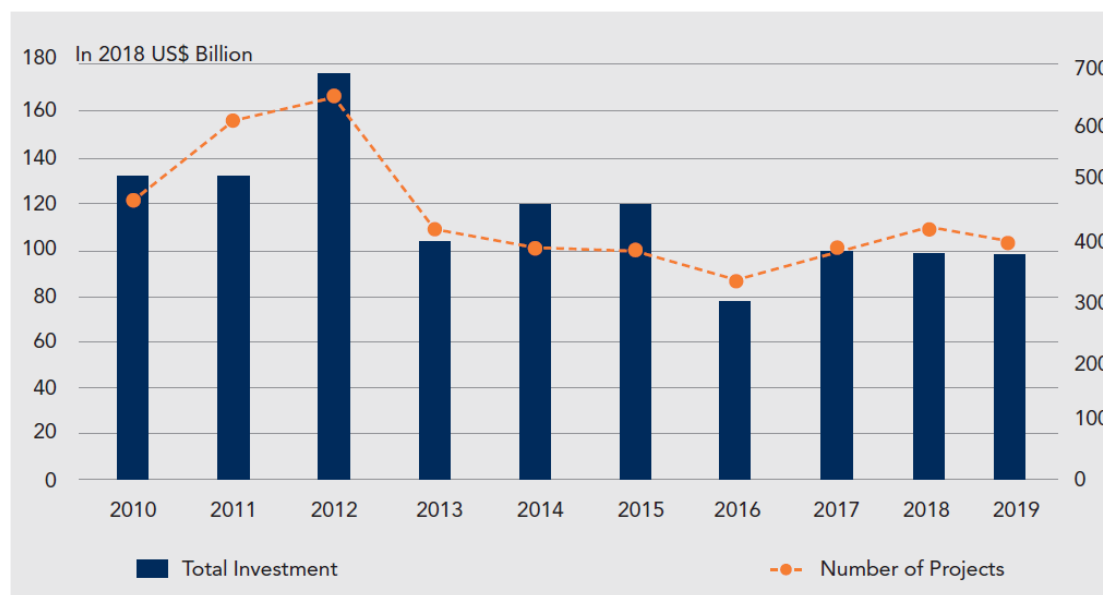
PPPs, often supported by the World Bank and other international development agencies, abound in generating infrastructure projects in the developing world. In the case of very large infra-projects, private contractors are paid by the central/local government or the international aid and development agencies and may have a residual operating interest and access to user fees for the longer term. In these days, PPPs to build and operate infrastructure assets are increasingly common in less-developed countries (LDCs) (Buffie et al., 2016). The phenomenon and practice of PPPs has its origin in mostly in British and American public policy, there has been an increasing interest in PPPs in developing countries too (Weaver & Manning, 1991).

Several factors that account for the increased popularity and interest in PPPs tend to be similar across developed and developing countries (Irfan, 2015). PPI investment in 2019 accounts total US\$ 96.7 billion across 409 projects, and a decrease of 3 percent over 2018 investment levels of US\$99.7 billion. The total investment for 2019 was 7 percent below the previous five-year average of US\$103.5 billion but continued the recovery from the 10-year low of US\$76.8 billion in 2016.

While investment commitments had been expected to surpass 2018 investment levels, a dampened investment climate in the second half of the year. There was also a 4-percent decrease in the number of projects from 428 projects in 2018 to 409 projects in 2019, but the number of projects in 2019 were higher compared to 2017 and 2016 with 386 and 353 projects, respectively.

Figure 2.9 shows that PPI projects in 2019 saw a 6 and 16 percent rise compared to projects in 2017 and 2016, respectively. The decrease in investment level last year can be attributed to a dampened investments climate especially apparent in Indonesia, India, China, Mexico, and South Africa.

Figure 2.9: Global Investment Trends in PPIs



Source: World Bank (2019a)

Table 2.15: Top five Countries with Investment Commitments in H1 2020

Country	H1 2020 PPI (US\$ Millions)	H1 2020 PPI as a share of GDP	H1 2019 PPI as a share of GDP	Number of Megaprojects in H1 2020
Mexico	4,015	0.32%	0.10%	1
Brazil	3,543	0.19%	0.62%	0
China	2,859	0.02%	0.13%	0
Pakistan	1,912	0.69%	0.60%	1
India	1,762	0.06%	0.16%	0

Source: World Bank (2019b)

Table 2.15 shows that investment commitments in India dropped to US\$1.8 billion, a decrease of 62 percent from the first half-year of 2019 levels. Transport continued to dominate investments in the country despite the sector taking a hit this year due to pandemic. There were three airport concession in the country, representing the first round

of airport privatizations slated for major cities nationwide. In the first half-year of 2020, however, investment details were only available for one of the three projects.

2.8 Literature on Infrastructure

The concept of infrastructure has a wide range of definitions in the literature. In the existing literature there is no single definition of infrastructure is accepted (Diamond, 1990). It is a broad term that originates from the French word *infra*, meaning *below*; and the term *structure* which refers to an arrangement of, and relations between the parts or elements of something complex. The development process of infrastructure provides opportunities for broad-based economic growth and improved quality of life. The expansion of infrastructure can promote the growth of basic industries by facilitating mobility and social interaction. The increase in income from jobs will leads to increased savings and investment, which in turn, raises overall standards of living by improving sectors such as education and health.

There is no consistent definition of “infrastructure” across the economic literature. Some ideas were reviewed about twenty years ago in a much-cited paper (Gramlich, 1994) but not much progress in the taxonomy has been achieved in more recent years. In a wide perspective, infrastructure can be defined “as the sum of material, institutional and personal facilities and data which are available to the economic agents and which contribute to realizing the equalization of the remuneration of comparable inputs in the case of a suitable allocation of resources that is complete integration and maximum level of economic activities”. In this way several ideas were reviewed around 1970s to 1980s. From the broadest perspective, infrastructure is defined: “as the sum of material, institutional and personal facilities and data which are available to the economic agents and which contribute to realizing the equalization of the remuneration of comparable inputs in the case of a suitable allocation of resources, that is complete integration and maximum level of economic activities (Jochimsen, 1966). Hence the infrastructure are public facilities that are often essential prerequisites for economic life and can be differentiated into tangible, intangible and institutional infrastructure. (Goldsmith, 2015a). In this regard, many countries identify infrastructure development as a priority to overcome absolute poverty, to build a robust economy, support sustained growth, and resolve problems from uncontrolled management. The main argument in favor of PPPs in infrastructure is therefore that they can lead to efficiency gains in service delivery (Fabre & Straub, 2019a).

The essential physical and economic characteristics of infrastructure are as:

Immobility: Fixed in space and needs to be designed for a specific geography.

Longevity: Takes a long time to build and lasts a long time if well maintained.

Expensive: Costs a lot of resources to construct, operate and maintain.

Public service: Provides a basic service that is of value.

According to the Oxford English Dictionary (OED) Infrastructure means “the basic physical and organizational structures and facilities (e.g., buildings, roads, and power supplies) needed for the operation of a society or enterprise: the social and economic infrastructure of a country”. It means that there is not any unique way of classifying the different physical infrastructure sectors.

Table 2.16 proposes a classification based on the function served and reflecting the common types of contemporary projects presented for financing. In simple terms, individual projects are either buildings with different functions or components of network. E.g., water, transport, energy, and communications are frequently jointly referred as “economic infrastructure”, whilst hospitals and schools are deemed “social infrastructure”, although there are ample arguments on the “Health” and “Education” sectors in separate categories.

Table 2.16: Infrastructure service sector

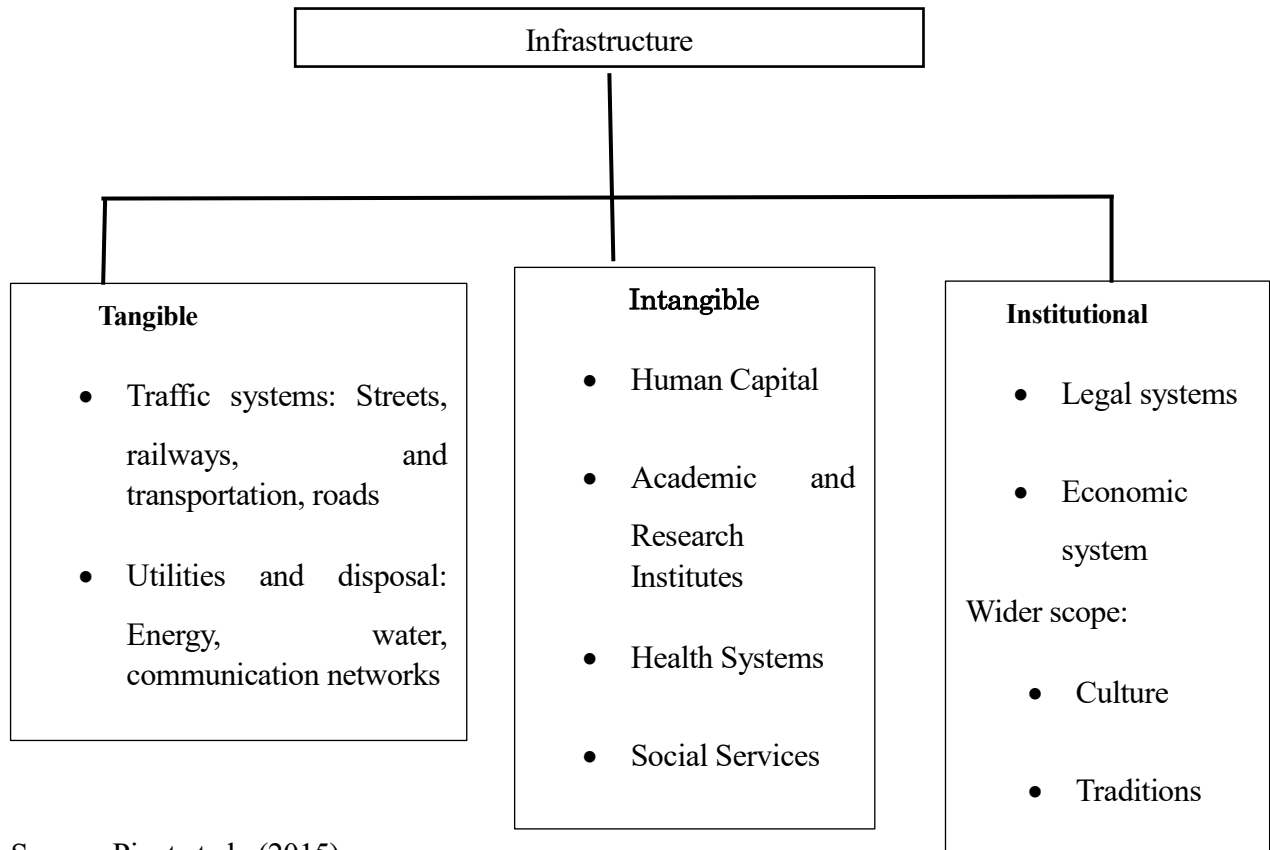
Sector/Service	Typical Physical Works
Urban	Public building; streets, street lighting; leisure facilities
Social	Universities; schools; hospital; social housing; prisons
Water Flood Defenses	Irrigation canals; water supply networks; dams; drainage
Transport	Roads; bridges; ports; canals; railways; tramways; airports
Communications	Telegraph; telephone; wireless; TV; Internet; broadband
Energy	Gas; electricity; oil; nuclear; renewables
Environmental	Wastewater treatment; waste disposal; green infrastructure

Source: Goldsmith (2015b)

To elaborate on the characteristics of infrastructure sectors, there is necessary to specify how we define and delineate the respected sectors. In the literature, infrastructure sectors have been studied from different perspectives (Markard, 2010a).

The following figure 2.10 discusses the Categories of Infrastructure in Tangible, Intangible and Institutional infrastructures.

Figure 2.10: Defining Infrastructure



Source: Picot et al., (2015)

Economic infrastructure is considered to provide key intermediate services to business and industry and its principal function is to enhance productivity and innovative initiatives. Hard infrastructure facilitates includes, roads, highways, bridges, railways, public transport, telecommunications, gas generation, electricity generation and distribution. Soft economic infrastructure encompasses vocational training, financial facilities for business the facilitation of R&D and technology transfer, and organizations encouraging export.

2.9 Characteristics of Infrastructure

In the public discussion, infrastructure is often understood as goods provided by the public due to its characteristics of public goods, economies of scale and scope (Torrissi, 2010). Also, in his research Torrissi (2009a) provides an extensive overview of definitions of

infrastructure and defines infrastructure as a “capital good (provided in large units) in the sense that it is originated by investment expenditure and characterized by long duration, technical indivisibility and a high capital-output ratio” further he proceeds and assumes that infrastructure is also a public good in term of the “proper economic sense, that it fulfills the criteria of being not excludable and not rival in consumption (Torrise, 2009b). The most often discussed argument is the inevitability of the provision of the good or service for any economic system and its growth as infrastructure services are considered essential for consumers and citizens and are often provided by governments. Infrastructure has certain characteristics as indicated as follows, that determines how it is provided. The following points are broadly applicable to all infrastructure sectors.

- **Lumpy with large Investments**

Infrastructure investments tends to be huge and “lumpy”. Large investments are typically related to physical assets such as transmission networks, pipelines, power plants, treatment plants etc. (Markard, 2010b).

- **High Sunk Costs**

Infrastructure investments are generally sunk (Sawhney, 2001). Investments in networks of piped gas supply, piped water supply, and transmission lines cannot generally be converted to other users or moved elsewhere and are therefore mostly irrecoverable. Once incurred, these costs are “sunk”. Such sunk cost cannot completely or effectively be used in other market segments.

- **Long payback period**

Infrastructure entails large capital investments. The need for keeping user charges reasonable implies that the payback period should also be long. This is facilitated by the fact that life of infrastructure projects. For example, PPPs procured projects like road, airport, railway, or power projects needs longtime payback periods 30 to 60 years. Such long payback periods make infrastructure difficult to finance.

2.10 Key dimensions of Infrastructure

The PPP concept has been defined as ‘co-operation of some sort of durability between public and private actors in which they jointly develop products and services and share risks, costs and resources which relate to products or services (Akintoye, Hardcastle et al, 2010). Therefore, PPPs can bridge the infrastructure gap by catapulting scarce public

resources and bringing in private sector technology and innovation for higher quality services and greater productivity (Pratap & Chakrabarti, 2017). Infrastructure plays a very crucial role in underpinning investment, growth, and poverty reduction. It helps to promote inclusive economic growth and provides access for the poor to basic services and income opportunities (Lohani, 2009). Some of its dimensions are discussed below.

2.10.1 Infrastructure and Economic Development

The investment in Infrastructure sector is expected to directly result in an increase in productivity both at the micro and macro levels, with an upward shift in the production possibility frontier. Further, with a given inputs or resources, the production is presumed to increase on a sustainable basis due to increased infrastructure availability (Nagesha, 2015). Infrastructure plays a vital role in fostering growth, increasing productivity, and reducing poverty and inequality (Andres et.al, 2008). Several evidences on the link between infrastructure and economic development is found to be sketchy in literature. In the recent years, ample attempts have been made both in econometric and input-output framework for estimating the link between productivity of its investments in infrastructure and economic development.

The relationship between infrastructure and economic growth seems to be an attractive topic for researchers (Drita, 2018). The first study from Arrow & Kurz, (1970) presented a link between capital investments and economic growth. Further, the topic was treated by several authors and examined various models to explain the impact of infrastructure investments in economic growth. Researchers around the world have presented different sides of the impact of infrastructure in economic growth. Some researchers proved the positive impact of infrastructure investments in economic growth, on the other hand some researchers are sceptic about the positive link. They have also proved through empirical methodologies that infrastructure investments do not impact economic growth or these investments have negative impact in economic growth. The Following literature explains briefly about the impact of infrastructure investments in economic growth.

The pioneer work by Aschauer (1989a, 1989b) Cobb-Douglas production function was estimated with stocks of various infrastructure as capital and labour as the input. He found that military capital had insignificant relationship with productivity. However, the hard infrastructure such as streets, highways, airports, mass transit, sewers, water systems, etc., had the most explanatory power of productivity.

Similarly on the relation between infrastructure and the economic development Munnell (1990) on his work examined the relationship between public capital and economic activity at the state level in USA. In his first analysis, public capital was found to have a significant and positive impact on output although the output elasticity was roughly one-half the size

of the national estimate. In his second analysis he found that public capital was playing significant role to enhance the productivity of private capital, raising its rate of return and encouraging more investment. Interestingly, from the investor perspective, public capital was looked upon as a substitute for private capital which crowded out private investment.

The longevity or life expectancy of infrastructure is largely determined by the set of capital-intensive and generally long-lived structures and devices. Table 2.17 discusses on the general service life of infrastructure projects. But the longevity is not guaranteed.

Table 2.17: Infrastructure Life Expectancy

Infrastructure Facility and Components	Expected Service Life
Airports Buildings/ structures/ runways/ taxiways/aprons	Up to 150 years
Bridges Decks Substructure/ Superstructure	Up to 50 years Up to 125 years
Tunnels (For auto traffic, water)	Up to 200 years
Ports, rail, and intermodal facilities (Concrete/steel/ stone construction)	Up to 300 years
Public buildings (Concrete/steel/brick construction) And sports complexes	Up to 300 years
Electricity (Concrete/steel construction) Transmission/ Telephone lines	
Nuclear power plants (Concrete/ Steel Construction)	500 years or more

Source: Compiled by the Author

2.10.2 Infrastructure and PPPs governance

The interest in infrastructure PPPs is motivated by an urgent need to improve infrastructure around the world, and to find ways to increase the attractiveness of private sector participation in infrastructure development to both governments and private investors (South, Levitt, & Dewulf, 2019). The primary focus of PPPs research in construction and engineering management is governance and management of contractual and relational ties between public, private and the civil stakeholders (Tang, Shen, & Cheng, 2010).

2.10.3 Stakeholder theory and Infrastructure PPPs

The stakeholder theory was developed as a perspective of strategic business management. According to Freeman, (1984a) stable organization could evaluate and meet the challenges of its external environment as it “takes into account all of those groups and individuals that can affect, or are affected by, the accomplishment of the organizational purpose. Stakeholder theory is an excuse for managerial opportunism (Parmar, et al., 2010). As already discussed in above chapters on the formation of PPPs. The public sector supervise the project and acts on the behalf of the society, takes care of the total benefits of PPPs infrastructure projects. One hand the private sector is more focused on profits through construction, financing operationm and other contracted services. They are PPP stakeholders and they include the entities which have an interest in the project and the ability to influence the project (Freeman & Evan, 1990). The stakeholders also have a legitimate claim and moral responsibilities and interact with the project thus making its operation possible.

- **Theory of Partnership in Infrastructure**

This section explores some of the theoretical and policy issues concerning the reasons for developing and operating partnerships. In simple language, partnership is a bond in which two or more individuals’ pool money, skills, and other resources, share profits and loss with the terms of the agreements. The motto of partnership is to promote urban and rural regeneration or economic development. Partnerships involves a wide range of actors which includes the central or federal government, local government, the private sector, and local communities and the underlying issues that they deal with are multifaceted. Partnerships approaches have received widespread support from across the political spectrum, including policymakers, officials, and local communities. Many case-studies of such partnerships exist (Wannop, 1990) however, the more general theoretical basis for understanding and analyzing for partnership remains poorly developed. Since the partnering relationship concerns an economic transaction between two parties and a natural way to approach the concept was through contract theory.

Table 2.18 discusses on the dimensions of partnerships in PPPs infrastructure projects. The range of partnerships and the dimensions vary dues to the countries natural, political, and economic conditions.

Table 2.18: Dimensions of Partnerships

Definition	Dimensions
An arrangement between two or more entities that enables them to work cooperatively towards shared	<ul style="list-style-type: none">• Inter-organizational

compatible objectives and in which there is some degree of shared authority and responsibility, joint investment of resources, shared risk taking, and mutual benefit (HM Treasury, 1998).	<p>relationship</p> <ul style="list-style-type: none"> • Cooperation • Shared objectives • Joint investments • Equal risk sharing
Long-term contract between a private party and a government entity, for providing a public asset or service, in which the party bears significant risk and management responsibility, and remuneration is linked to performance (World Bank Group, 2016).	<ul style="list-style-type: none"> • Long-term contract • Management responsibility • Performance base • Risk sharing
Partnerships which include contractual arrangements, alliances, Cooperative agreements, and collaborative activities used for policy development, program support and delivery of government programs and services (Osborne, 2005).	<ul style="list-style-type: none"> • Contractual arrangement • Cooperative agreements • Collaborative activities
A cooperative venture between public and private sectors, built on the expertise of each partner, that best meets clearly defined public needs through appropriate allocation of resources, risks and rewards.	<ul style="list-style-type: none"> • Cooperative Venture • Allocation of resources • Equal risk and rewards
A relationship involving the sharing of power, work, support and/or information with others for the achievements of joint goals and/or mutual benefits	<ul style="list-style-type: none"> • Interorganizational relationship • Cooperation • Power and information sharing • Shared objectives

2.11 Rationale of Usage of PPPs in Infrastructure

Several works of literature on PPPs have revealed reasons for both private and public partners to enter a partnering relationship. The assumption here is that the rationale for the partnership will have substantial implications and impact on how the partnerships are viewed by each partner and, consequently, reflected in the way relationships are managed, especially during the implementation phase of a PPPs life cycle. Such benefits can take a variety of forms such as financial and material, and other tangible benefits. The rationale to implement the PPPs can be grossly divided into the following (1) Financial reasons (2) Development reasons (3) Efficiency reasons. The main rationale behind the PPPs project is efficiency. PPPs proponents claim that this procurement model boosts efficiency, which can be measured through Value for Money (VFM) tests, i.e., the quantification of the efficiency of the PPPs model in comparison to traditional procurement models. The rationale for introduction of PPPs in infrastructure provision consists of the many expected advantages of bundling the project phases and making use of profit seeking motives, diligence, and experience of private parties (Makovšek, 2013). Ali Mohammad Mistarihi 2011 in his thesis discusses some of the core issues of PPPs partnering in infrastructure are as follows:

- **Partnering Cooperation Theory**

In the middle of the 1990s, a number of studies appeared in the engineering management literature, reviewing and assessing the conceptual basis of a recent development in the construction industry that of partnering (Crowley & Karim, 1995). The theory of partnering in construction industry is based on the logic that both public and private organizations have good reasons to cooperate in practice. Private firms are operating within ‘industrial networks’ where they depend on a range of other firms including public sector organizations. Importantly, governments are also becoming more and more dependent on the private and semi-private actors for implementing their policies. As a result, there is necessity of various actors, and therefore, actors enter partnering relationships. Furthermore, according to cooperation logic, Schaeffer and Loveridge, (2002) argued that “all participants expect to end up better off than they would have if they were acting alone”. In this way the theory of cooperation is useful to partially offer an answer as to why partners do cooperate. But it could not answer how they actually cooperate in practice, and whether they voluntarily cooperate or are forced to do so by a central authority.

- **Theory of enforced Cooperation**

McQuaid (2000) has already explained the main reasons for cooperation between actors as due to the threat of a central authority, common objectives, and self-interest. Although these are the main reasons for cooperation, some key actors are not subject to such central authority or common motives, and they still have their own reasons that 'force' them to cooperate. The theory of enforced cooperation provides deeper insights to explain why partners entering into a partnering are forced to do so due to 'other reasons. Only this theory could not answer the questions how partners cooperate and interact with each other in practice for further answers 'Game theory' is explained.

- **Game theory**

One theory of economic theory that can structure the issues the partnership relationships and interaction is game theory (McQuaid, 2000). Game theory assumes that the partnership process and the interaction and cooperation between the same partners involve compromising and giving concessions whenever possible and needed to gain benefits in future cooperative interactions. The idea of giving out concessions in trade for future gains is described by McQuaid (2000) as a game played by partners during their interaction with each other in a partnership arrangement. As such cooperation between partners is dependent upon a strong chance that these partners meeting again for future interactions.

Game theory also add further insights into the process of partnerships by relating it to the future interaction between partners, however, it does not answer the question of 'how' this interaction or 'cooperation' among different partners.

- **The view of Partnership Synergy**

In theoretical aspects partnerships achieve synergetic outcomes that amount to more than can be achieved by individual partners working on their own (Jones & Barry, 2011). Lasker, Weiss, and Miller, (2001) used this logic to argue that partnership synergy is "the proximal outcome of partnership functioning that gives collaboration its unique advantage". partnership synergy is mainly based on systems thinking and the assumption that the whole is greater than the sum of its parts. Lakser, Weiss and Miller (2001) in their research introduced several determinants to achieve partnership working synergy. These includes resources, partner characteristics and relationships, partnership characteristics, and the external environment. Only, the trustful, respectful, acceptable levels of conflict and power balances in the relationships among partners can greatly help the realization of partnership synergy.

Further Noble and Jones, (2006) elaborated the theory of synergy partnership to the

‘Maintain Synergistic Momentum’ (MSM) through a more informal and social interaction and coordinated and collaborated efforts. In the case of India MSM framework is very useful in providing a more detailed picture of the difficulties that boundary spanners experienced in PPPs projects outcomes. PPP development models can provide further insights in finding answers to the question of ‘how’ organizations enter into partnering relations and the details of these relationships.

2.12 PPPs pitfalls in Infrastructure sector

PPPs enjoy a good reputation for delivering projects on time and within budget. However, there have been some obvious disappointments, and they remain controversial. Discussing on the pitfalls of PPPs in simple language PPPs projects are typically complicated projects (Alexandersson, 2007). The major reason for this is the fact that the projects generally have to deal with long-term investments in two divided phases the construction phase and the operational/ management phase. PPPs are significantly more complex than traditional procurement methods. Consequently, there is a significant risk in sinking resources into unworthy or unsuitable PPPs projects that consume more resources than conventional and less complex procurement routes. Although PPPs may have strong advantages, they also have several shortcomings. Several authors and researchers argued that in the literature there is a tendency to stress mainly PPPs positive sides. In this section author focuses on disadvantages involved in using PPPs. The main reasons for being complicated is the fact that the projects generally have to deal with long-term investments that are divided in main two main phases- the construction phase and the operational and maintenance phases being very different in character and implying different demands. This section provides an overview of the main commonly observed challenges faced by the public sector to the delivery of PPPs.

A major part of the forecast benefits from the private sector funding of public infrastructure arises through the planned transfer of risks from the public sector to private parties (Hodge, 2004). In general risk is the “effect of uncertainty on objectives”. In other words, risks are uncertain (expected or unexpected) possibilities, opportunities or threats that might happen in every infrastructure project (Wang et al., 2017). Several authors assume that PPPs have more and a higher degree of risks than other projects because they involve many stakeholders, entail complex project arrangements, having special rules regarding financing, documentation, and taxation. According to the formation of PPPs models in particular projects, there is always the uncertainty of risks. This section is to explore what principal risks PPPs face and how researchers understand them. This will allow the researcher to investigate in the risk’s issues of Indian PPPs projects. Whether PPPs are exposed to the same kinds of risk and what risk allocation issues the existing

literature delineates.

According to Grimsey & Lewis, (2004b) some of the risks that affects the infrastructure projects which are discussed below:

- Technical risk: Mostly occurs due to the engineering and design failures.
- Construction risk: Numerous Construction companies enters the construction phases, and issues could evolve easily.
- Risk Management: Assumes that PPPs have more and higher degree of risks than other projects.
- Policy, Legal and Institutional Frameworks: PPPs usually require new approaches, policies and capabilities to support the preparation, design, delivery and management of projects and public services (European PPP Expertise Centre, 2015).
- Higher costs of capital: The PPPs projects often include total or partial financing of infrastructure.
- Complicated contracts and hold-ups: Numerous contracts with numerous partners evolve the contradiction which may affect the whole process.

2.13 Summary

Infrastructure development has become “an increasingly complex and diverse process” and it includes various stakeholders, multiple steps from planning to disposal, and integrated issues that emerge from interdisciplinary fields such as planning, engineering, financing, and managing (An, 2015). Considering the need for additional sources to complement the gap for investment in economic and social infrastructure, The GOI, central government and the state government and municipal levels have also acknowledged that immediate private funding for long-term projects is an important investment alternative. It is in this context that PPPs have become increasingly selected as policy instrument in India.

CHAPTER 3: RESEARCH PHILOSOPHY AND METHODOLOGY

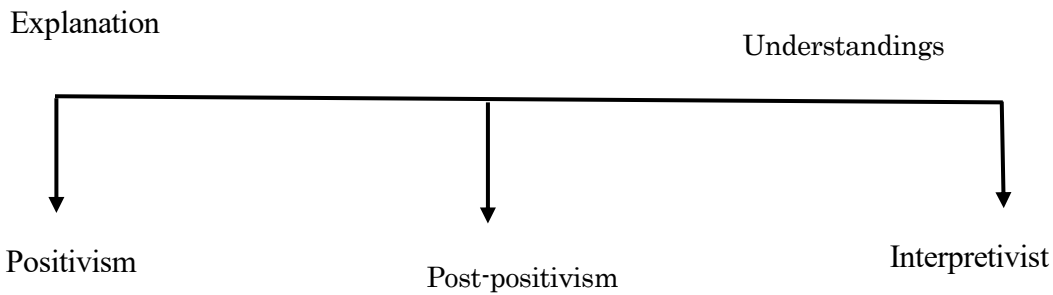
3.0 Chapter Introduction

This chapter provides an overview of the research philosophy and methodology adopted in this thesis. It describes methodological choices available for a researcher and justifies the positions that the author has adopted. At first, the chapter begins by discussing the study's philosophical stance regarding the nature of reality and the relationship between the researcher and the researched. Then, the chapter delineates the approach to social theory that this research takes in terms of the direction of its reasoning and justifies an inductive approach that the author has adopted. The Author has used the qualitative method. Section 3.2 elucidates the author's ontological and epistemological stances which determine the research strategy in the form of a quantitative approach and/or qualitative approach. Where this section highlights the nature, purposes, and characteristics of each method of inquiry and explains the author's logic behind selecting a qualitative approach. Further, the chapter moves on to the in-depth description of the data collection methods that this study employs. This section highlights the details of two PPPs projects that the researcher selected for investigation.

3.1 Research Paradigm

A research paradigm is a "basic set of beliefs that guides an action" (Guba, 1990). It is understandings what one can know about something and how one can gather knowledge about it. A Paradigm is inclusive of several components that can be categorized as Ontology, Epistemology, Methodology, and Methods (Scotland, 2012). A paradigm guides the research efforts and directions of scientific communities, providing a framework into which facts and ideas can be organized and evaluated. Generally, in the philosophy of the social and human sciences, there are three broad paradigms. 1) Positivism, 2) Interpretivist, 3) Post -positivism (Grix, 2010a).

Figure 3.1 Research Paradigm



Source: Grix, 2010b

3.1.1 Positivism

Positivism “identifies cause and effect through ‘the constant conjunction’ of events, resulting in what has been called the ‘covering law’ or ‘law explanation orthodoxy’” (Ramsay, 1998). The positivist paradigm is also called a scientific paradigm (Mack, 2010). The purpose of the research paradigm is to prove or disprove a hypothesis. The characteristics of positivism research include an emphasis on the scientific method, statistical analysis, and findings. The term positivism refers to a branch of philosophy that rose to prominence during the early nineteenth century on the works of the French philosopher Auguste Comte (Richards, 2003). The evolution and consolidation of positivism in the French sociological tradition, then reached to the other regions of the globe and becoming a strong scientific method in research philosophy (Majeed, 2019).

3.1.2 Post-positivism/Critical realism

Post-positivism can be understood as a research paradigm placed between both positivism and interpretivism. Post-positivism is defined broadly to incorporate approaches to knowledge growth rejected by positivism as unscientific, such as psychoanalysis, Marxism, and astrology (Fox, 2008). A growing number of researchers argue the need for change in direction away from positivism “as the only accepted vehicle for knowledge acquisition, particularly for the social science”.

According to Tsang & Kwan, (1999) the critical realism is based on three key points which are as follows:

- i. The reality to which scientific theories primarily aim to refer is the structures and mechanisms of the world, rather than empirical events. Structures have been defined as sets of internally related objects and mechanisms as ways of acting.
- ii. Underlying structures and mechanisms are only contingently related to observable events.
- iii. Scientific knowledge of reality, especially social reality, is never infallible, it is still

possible to acquire such knowledge through creative construction and critical testing theories.

3.1.3 Interpretivist

Interpretivism denies the possibility of generalization, or they ignore the issue, but they do generalize, and this is inevitable (Williams, 2000). It means that interpretivists believe that reality is not objectively determined but is socially constructed (Edmund, 1965). In this way, the paradigm of interpretivism was developed by philosophers largely in reaction to the application of positivism to the social sciences. It is an umbrella term that covers a very wide range of perspectives in the human sciences (Grix, 2010c). Respectively, Mir & Watson, (2001) noted that the phenomena studied by interpretivist researchers only exist to the extent that they are studied and interpreted by them and that there is no underlying objective or ultimate truth. In essence, this research paradigm is concerned with the uniqueness of a particular situation, contributing to the underlying pursuit of contextual depth (Myers, 1997).

Table 3.1: The Current Study's Interpretive Framework

1. Research Context and Background	Theoretical paradigm	Constructivism (Relativist ontology, subjectivist epistemology, and naturalistic set of methodological procedures).
	Ethical considerations	Difficulties to include other's views, a limited number of case studies, and dual.
	Methodological limitations	Difficulties to include interviews in related topics.
2. Research Design and Strategies	The researcher	Nepalese in National, Studying at the Soka University of Japan.
	The research problem	How the Implementation phase of PPPs is implemented in India?
	The research purpose	Tries to offer deeper insights into the effective management of PPPs projects in India during the phase of implementation;
	The research	Case study approach:

	strategy	National Highways (NHDP) Delhi Jaipur Highway Project Airports: DIAL
	Data collection	Secondary Data
3. Research Outcome and Final Product	Conclusion	Issues and Policies

Source: Compiled by the Author

3.2 Data Collection Method

Data collection is a process of collecting information from all the relevant sources to find answers to the research problem, test the hypothesis, and evaluate the outcomes. In this thesis, the data collection methods are divided into two categories: a) primary data collection b) secondary data collection. In this research, the author has used both primary as well as secondary data for analytical purposes. For empirically validating, the study employs the World Bank (WB) Private Participation in Infrastructure (PPI) investment database for the period.

3.2.1 Primary Data

As a primary data source, it provides direct or firsthand evidence about an event, object person, and work of art. Where it includes historical and legal documents, eyewitness accounts, results of experiments, statistical data, pieces of creative writing, audio and video recordings, speeches, and art objectives. Therefore, in this thesis author has collected primary data by conducting a questionnaire based on the literature review and research design, the questionnaire is constructed.

3.2.2 Secondary Data

Secondary data is usually defined in opposition to primary data. It refers to data that have already been collected by someone (Allen, 2017). In this research, collecting relevant data from the specified documents and compiling databases are needed to analyze the material and arrive at a more complete understanding. Various secondary sources have been used. The author has used several data sources, like World Bank, Indian Brand Equity Foundation (IBEF), Department of Industrial Promotion and Policy (DIPP), Public-Private Partnerships India database (PPPs), Toolkits, Public Policy, Legal expertise, etc. Also, relevant literature and data from different research papers, journals, books, and relevant reports have been used to build its literature framework and the whole scenario of the PPPs in the Indian public infrastructure.

3.3 Research Approach

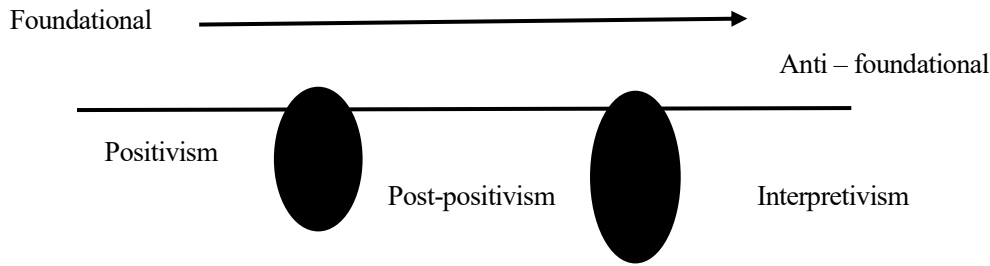
3.3.1 Ontological Positions

Ontology is the starting stage of all research, after which one's epistemological and methodological positions logically follow (Grix, 2010d). The ontology of research concerns the nature of reality or the nature of the known. Ontology claims assumptions that are made about the nature of social reality, which claims about exists, what it looks like, what units make it up, and how these units interact with each other (Hudson & Ozanne, 1988). It seeks to clarify the sense (or Senses) in which a thing may be said to be, or to exist, and to provide an account of the most basic categories of being. The theory itself is the set of entities that exist in philosophical approaches. The underpinning philosophical approach that a researcher adopts heavily influences how one investigates a specific topic. There are two alternative philosophical paradigms in the ontology of research, respectively: a) positivism and b) phenomenology (Collis and Hussey, 2003). One can view each research paradigm as a set of assumptions that describe the researcher's perception of reality, it means an approach to the research process and the tools that are used through the special methods of data collection and data analysis (Sarantakos, 2005). It means that a research paradigm has implications for the methodology that a researcher should employ to meet the study's objectives. According to the positivism approach, the nature of reality is objective, and the reality itself is singular. There are "things out there" that a researcher can discover, identify, and illuminate.

According to the positivist approach, the ontological issues are related to the nature of reality and its characteristics. When researchers conduct qualitative research, they are embracing the idea of multiple realities. Researchers from various research fields embrace different realities, as do the individuals who begin studied, and the readers of a qualitative study (Creswell, 2013).

Some authors wrongly conflate 'ontology' and 'epistemology' and even suggest that there is no 'sense in which one is, logically or otherwise, before to the other (Jenkins 2002). In this thesis, the author takes the phenomenological stance. Ontologically, the author believes that the world is socially constructed and subjective as opposed to the positivist view that reality is objective and external. Having described the author's choice regarding the ontological approach, the chapter moves on to the discussion of the thesis epistemological position.

Figure 3.2 Key epistemological positions



Source: Grix, 2010e

3.3.2 Epistemological Positions

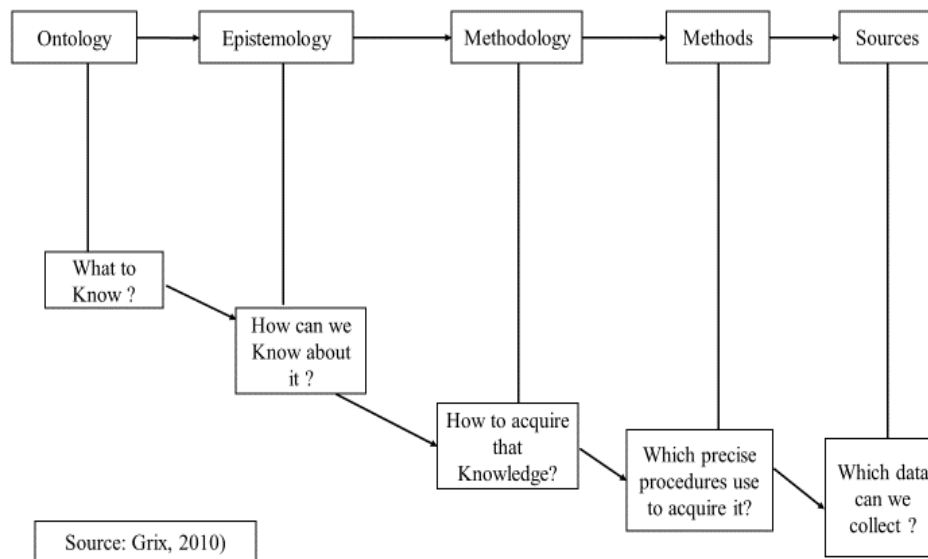
The term “epistemology” appeared at the beginning of the 20th century to designate a branch of philosophy specialized in the study of knowledge theories. These days it has become synonymous with the philosophy of science (Iacob, Popescu, & Ristea, 2015). The epistemological perspective of research concerns the relationship between the knower and the known, or between the researchers and researched.

The researcher’s ontological stance determines her/his epistemological positions as the perception of the world inevitably underpins the role that a researcher assumes in the world. Epistemology is one of the core branches of philosophy concerned with the theory of knowledge, especially regarding its methods, validation, and possible ways of gaining knowledge of social reality, whatever it is understood to be. In short, it claims how what is assumed to exist can be known (Blaikie, 2000). Epistemology is about how we come to know what we know; it also focuses on the knowledge-gathering process and is concerned with developing new models or theories that are better than competing models and theories. It is of paramount importance that the author understands how a view of the world affects the whole research process. In other words, the exclusive domain and structure of scientific concepts and theories, being an analytical and reflexive study, epistemology delimits two fields of analysis.

In this thesis, the author has adopted the ontological phenomenological research paradigm, the author takes on the epistemological stance that a researcher is a part of what he/she is investigating. Interaction with what he/she is researching is necessary, and it is an essential part of the research that this thesis presents. The author’s choice of the ontological research paradigm and the corresponding epistemological view permit consideration of PPPs development and management issues in India. These unique features will transpire the researcher’s interaction with those who will research, such as PPPs managers, government officials, and experts of central and local PPPs centers.

The methods chosen for the research projects are inextricably linked to the research questions posed and to the sources of data collected. The following figure.3.3 shows the interrelationship between the building blocks of research. This is an old-style method that shows the directional and logical relationship between the key components of research. However, the author declines to change the figure for the following reasons: the following figure shows the directional and a logical, relationship between the key components of research. In some points, the figure 3.3 is not able to show the impact and influence of the questions one is asking, and the types of projects are undertaking, on the methods chosen. However, it is the author's ontological and epistemological positions that shape every question of how the author poses and how the author sets about answering (Devine & Heath, 1999).

Figure 3.3: The Interrelationship Between Blocks of Research



3.3.3 Approach to Social Theory

Social theories are analytical frameworks or paradigms used to examine social phenomena. The term 'social theory' encompasses the ideas about how societies change and develop, about methods of explaining social behavior, about power and social structure, gender, ethnicity, modernity, and civilization, revolutions, and utopia's (Harrington, 2002). In contemporary social theory, certain core themes take precedence over others, themes such as the nature of social life, the relationship between self and society, the structure of

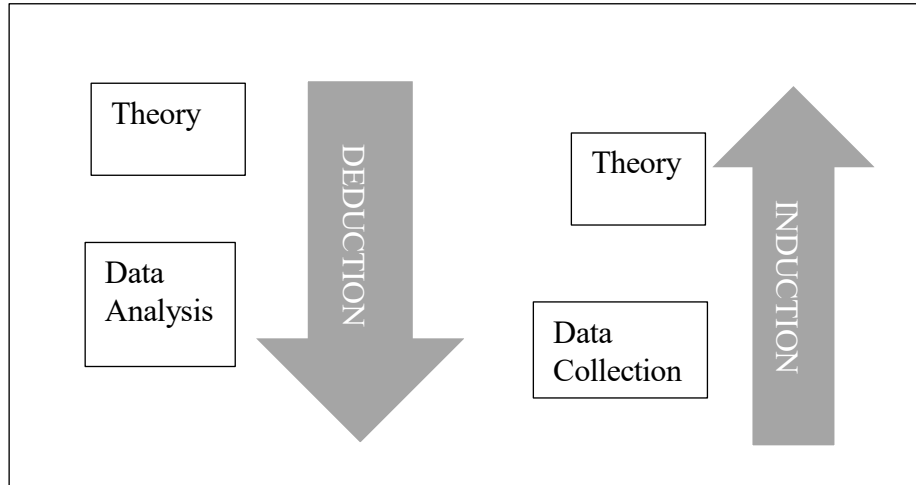
social institutions, the role and possibility of social transformation, as well as themes such as gender, race, and class (Elliott, 2008).

This section discusses an approach to social theory the author has adopted. While engaging in social theory, the author understands that 'social' will ultimately impact the design or interpretation of results while engaging. The most basic definitions of 'social' suggest that it involves communication or interaction. The following discussions focus on the researcher's direction of reasoning in the thesis.

Regarding the case of Indian PPPs, the author has approached social theory from a few perspectives. A researcher like Neuman categorizes a theory by the direction of its reasoning, the level of social reality that it explains (i.e., micro-level, meso level, and macro-level), the forms of explanation it employs (e.g., prediction, causal explanation, structural explanation, or interpretive) and the overall framework of assumptions and concepts, such as a positivist, interpretive or critical approach. The above sections 3.2.1 and 3.2.2 have already been discussed, the thesis' research paradigm includes ontological and epistemological positions. Therefore, the overall philosophical stance will become more complete by highlighting, in this section the approach to social theory that the research takes in terms of the direction of its reasoning, both in deductive and inductive methods.

A deductive research approach is understood as the researcher's studies what others have studied, reads existing theories on the phenomenon the researcher wants to investigate, and then tests his/her hypotheses that emerge from those theoretical studies. In contrast, when the researcher takes an inductive approach, he/she starts with a set of observations and moves from data collection to theory development (Blackstone, 2012a). The inductive approach to developing the research is selected and shown in the following fig 3.4. It is frequently used to build a theoretical framework for the event of PPPs, by analyzing the background and then creating an understanding of the mechanism and possibilities of its optimal implementation for mutual benefit and economic development.

Figure 3.4: Deductive and Inductive Nature of Research



Source: Blackstone, (2012b)

3.3.4 Research Approach

Table 3.2 is Author's Research Approach, at first, it discusses in the reality of the known subject as ontological approach. Further, it elaborates in epistemological issues like the relationship between the researcher and researched where it highlights the study's issues. In second part it details the reality of PPPs in India both in academic study and the development of literatures. The whole thesis accepts as the macro level economic approach. The whole scenario is accepted as the social theory approach.

Table 3.2: Author's Research Approach

An approach	Issues addressed	Adopted approach	Comments
Ontological	Nature of the Known.	Phenomenological approach	Reality is subjective reality is socially constructed.
Epistemological	Relationship between the researcher and the researched.	A researcher is part of research what he/she is researching	A researcher interacts with the study's participants.
Approach to social theory in terms of reasoning			The whole research process is beginning with detailed observations of

			reality and moves to the more abstract and generalizing theme.
Level of Theory	Level of Data analysis.	Micro-level,	Interaction between organizations.
Guiding theory	What theoretical framework the study employs.	PPP governance concept.	Management of partner relations in a PPP model.

Source: Compiled by the Author

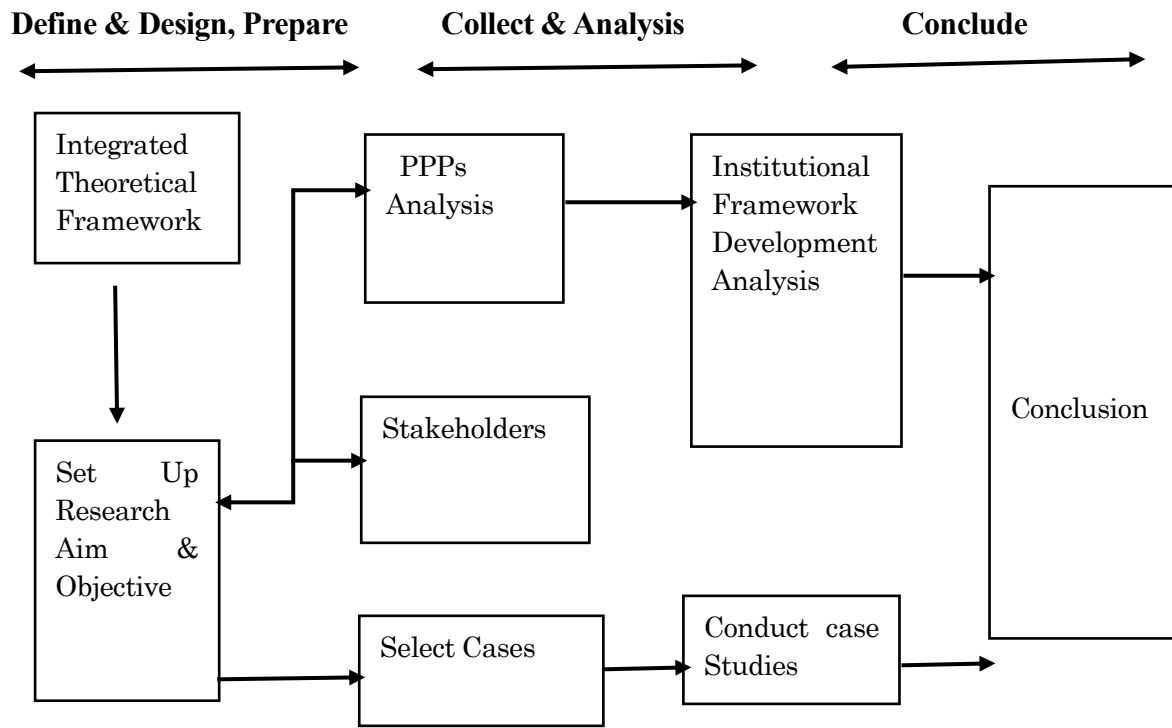
3.4 Methodological Choices and Research Strategy

3.4.1 Research Strategies

A research strategy considers the general orientation of conducting research (Bryman, 2001). It introduces the main components of a research project such as the research topic area and focus, the research design and the research methods refer how the author proposes to answer the research questions set and how the author implemented the methodology. To focus on the research project, it is helpful to consider the purpose of the research, the nature of the research question, and the research strategy (Marshall & Rossman, 2016).

Quantitative research and qualitative research represent principal methodological choices for a study. One can view these two options as methods of inquiry or research strategies. According to Yin (2003), the research strategy has its advantages and disadvantages, depending on the three conditions 1) type of research 2) the control research has over behavioral events, and 3) the focus on contemporary or historical phenomena.

Figure 3.5: The theoretical framework of the study



Source: Compiled by the Author

In the process of conducting research, the author's first choice is to rely on qualitative research.

- **Quantitative Research**

Quantitative research relies on the collection and analysis of numerical data to describe, explain, predict, or control variables and phenomena of interest. This method of research represents the principal methodological choices for a study. The Author has viewed these two options as methods of inquiry of research strategies.

Quantitative research is expressed in numbers and graphs. It is used to test or confirm theories and assumptions. This type of research can be used to establish and generalize the relation between facts about a topic. For tools e.g., surveys, experimental, research, content analysis, etc.

- **Qualitative Research**

Qualitative research is expressed in words. It is used to understand concepts, thoughts, or experiences. This type of research enables the author to gather in-depth insights on topics that are not well understood. For tools e.g., interviews, ethnography, discourse analysis, etc. (Streefkerk, 2020a).

Table 3.3: Variation of Quantitative and Qualitative Research

Quantitative Research	Qualitative Research
<ul style="list-style-type: none"> • Focuses on testing theories and hypotheses • Analyzed through mathematics and statistical analysis • Mainly expressed in numbers, graphs, and tables • Requires several respondents • Multiple-choice questions • Key terms are testing, measurement, objectivity, and replicability <p>Data Collection Method</p> <ul style="list-style-type: none"> • Surveys, Experiments, observations, Content Analysis 	<ul style="list-style-type: none"> • Focuses on exploring ideas and formulating a theory or hypothesis • Analyzed by summarizing, categorizing, and interpreting • Mainly expressed in words • Few and focused respondents • Open-ended questions • Key terms are understanding, context, complexity, subjectivity <p>Data Collection Method</p> <ul style="list-style-type: none"> • Interviews, Focus group, Ethnography, Case studies, Literature review

Source: Based on Streefkerk, (2020b) and partially added by the Author.

However, it is worth noting that the themes identified in the literature appraisal, literature gaps, and the evidence from extant research also may guide qualitative research. The starting point of this study is the thematic analysis based on themes and gaps that the author identified in the literature appraisal, whilst the themes can be adjusted after reviewing some data. The researcher has determined the initial themes as follows: examples, sources, and implications of partner opportunistic behavior in a PPP; partner interaction in a PPP; risks and risk management in a PPP; partnerships critical success factors.

- **Action-oriented research:**

Action research is perhaps the most widely used form of action-oriented research (Small S. A., 1995). According to Lewin, (1946a) action-oriented research is one way to address the crisis by making a connection between social science knowledge production and its potential public role (Small & Uttal, 2005). Action research is the most widely used form of action-oriented research (Lewin, 1946b). Lewin is generally recognized as having introduced this model of research for nearly 50 years. According to Lewin this method of research is a new approach to social research that involved the researcher trying to change the system while at the same time generating critical knowledge about it.

This refers to practical business research which is directed towards change or the production of recommendations for change. This process of research is a participatory process that brings together theory, practice, and reflection. However, it is worth noting that the themes identified in the literature appraisal, literature gaps, and the evidence from extant research also may guide qualitative research.

3.4.2 Qualitative Approach

The ontological and epistemological paradigms that a researcher adopts determine in part, is the choice of research strategy. Most importantly, a research strategy should be suitable for the study's objectives so that the latter can answer research questions. From this perspective, there is no single concentrated best, or ideal, research technique or strategy. This process involves the interpretation of data, whereby the researcher analyses cases, usually, in their social and cultural context over a specific period, and develops grounded theories that emphasize tracing the process and sequences of events in specific settings (Holloway, 1997).

The Qualitative research approach "is likely to produce important advancement in an Organizational science during the next decade" (Aguinis et.al. 2009). The main objective of this research is to investigate the experiences and perceptions of various stakeholders in the field of public-private partnerships regarding management challenges to PPPs in India and what ways and tools are available, in their view, to these challenges. In pursuit of this objective, the research will use a qualitative approach as one can hardly quantify the study perceptions and ways of adoption to management challenges of PPPs projects of India.

3.5 Geographical Domain of the Research

The need for infrastructure services in developing countries is large and most of the countries are unlikely to be able to finance their infrastructure needs out of their government budgets. Consequently, developing countries have turned to the private sector mainly through PPPs arrangements, to assist in meeting these economic development needs.

India is a developing, middle-income country, which has plenty of natural sources. After the 1990s, India exhibits many features as a globalized nation in terms of involvement of private sector promotion in PPPs. These days PPPs are considered a key component of India's economic development strategy. This is evident from the government of India's effort to use PPPs rapidly in both infrastructure and services sectors. However, PPPs are not new in India. Under the British government, the Great Indian Peninsular Railway Company 1853 was established but there are not any trustful pieces of evidence. The starting phase of private participation was 1990s economic liberalization. Both FDI and PPPs were newly introduced in the Indian economy. In PPPs, the institutional and legal frameworks are in practicing form. Additionally, not much is known about the management, implementation phase of Indian PPPs either in theory or in practice, therefore, the need to review this newly introduced PPPs experience in India.

This research has been purposefully planned to be conducted in India because the researcher has a sound knowledge of the Indian economy, society, and culture. The development history of India is remarkable for neighboring countries. Comparing the development history of India several infrastructure projects are going to allow foreign lenders and, has gained a view to capturing such sensitive and sophisticated research issues as researching in India. Additionally, conducting this research in India was suitable because the selected two PPPs projects met the objective of the current research that they are at two stages of the PPPs implementation phase: construction and delivery.

3.6 Case Study Design

Case studies are a research method aimed at holistically analyzing a phenomenon in the related context. Despite this fact, they cannot be used to answer the same precise research question (Yamashita & Moonen, 2014). It is "an exploration of a 'bounded system'.... a program, an event, an activity, or individuals" (Creswell, 1998). Case studies are the most used method in research on PPPs projects. Case studies have become one of the most common ways to do qualitative inquiry, but they are neither new nor essentially qualitative. The case study methods provide the researcher with an opportunity for collecting empirical data with consideration given to the complexity of the real-life setting (Roehrich, 2009).

Case study research has grown in reputation as an effective methodology to investigate and understand complex issues in real-world settings. The case study method provides the researcher with an opportunity for collecting empirical data with consideration given to the complexity of the real-life setting. Case studies are the preferred method for developing new theories or extending and testing existing theories in situations requiring a thorough understanding of what is happening. The case study method is not aimed to analyze cases, but it is a good way to define cases and to explore a setting to understand them.

The case study method “explores a real-life, contemporary bounded system (a case) or multiple bounded systems (cases) over time, through detailed, in-depth data collection involving multiple sources of informationand reports a case description and case themes”.

Case studies can be single or multiple-case designs, where a multiple design must follow a replication rather than sampling logic. When no other cases are available for replication, the researcher is limited to single-case designs (Tellis W., 1997). According to Tellis, (1997) case studies can be seen as satisfying the three tenets of the qualitative method: describing, understanding, and explaining. Therefore, case studies are particularly useful when exploring new areas of research.

This section focuses on an in-depth investigation of a single case. In the case of study research generally, information is gathered from several sources and using different types of data and observations, surveys, interviews, and analysis of documents. Both qualitative and quantitative data are used. This case study section allows a composite and multifaceted investigation of the issue. The following sub-sections explain the chosen case design, the case selection by introducing the chosen PPP, and the unit of analysis.

- **Multiple case design**

A multiple case study design-shorthand for a multiple-site, structured case study design-is a research strategy for generalizing a target of several cases from the results of a purposefully selected sample of cases (Greene & David, 1984). One of the fundamental issues in case study design and analysis is to determine whether a single case study or multiple case studies should be applied (Yin, 1981). This thesis applies multiple case study design as one of the main aims of the research to investigate a range of different themes and not an extraordinary or unusual theme alone. It would not seem appropriate then to use the single case study design which “like one experiment, is suitable when that case represents a critical case to test a well-formulated theory, an extreme or unique case, or a

case which reveals a previously inaccessible phenomenon”.

The multiple case studies design offers the researcher a proven tool for achieving a deep understanding of a specific phenomenon (Zach, 2006). In contrast, “multiple cases, like multiple experiments, represent replications that allow for the development of a rich theoretical framework” (Ellram, 1996).

In contrast, “multiple cases, like multiple experiments, represent replications that allow for the development of a rich, theoretical framework” a) a conceptual framework that provides the superordinate structure; b) a sampling plan that ensures representativeness of the target c) procedures for the conduct the research.

- **Case selection**

An important consideration when applying multiple case study research is case selection or sampling of cases. Case study sampling differentiates itself from the traditional way of sampling, which is appropriate for survey research. For the process, five components of research design are important: 1) a study’s questions; 2) its propositions if any; 3) units of analysis; 4) the logic linking the data to the propositions; and 5) the criteria for interpreting the findings. In the case study phase of this research, two main research questions and two propositions relevant to the questions are investigated.

Case 1) PPPs in Road Sector PPPs in Delhi Jaipur Highway (Greenfield) Project.

Case 2) PPPs in Airport Sector PPPs in Modernization of Delhi International Airport (Brownfield) Project.

3.7 Summary

This chapter has outlined the argument for the philosophical and methodological approach and strategy based on the research questions that the author has developed for this thesis.

CHAPTER 4: PPPs IN INDIA

4.0 Chapter Introduction

Revising chapter 2 showed that there is still debate whether the provision of public services such as the infrastructure sector should be a public or private sector. Although economist, in general, advocates the superiority of private ownership, recent work by Iwasaki & Mizobata, (2017), Shleifer, (1998), Tichá, (2012) emphasizes the virtues of state ownership or public-private partnerships under some incomplete contractual environments. The empirical studies of PPPs are relatively rare in large part because cooperative agreements between the government and the private sector are a recent phenomenon.

This chapter focus on the background issues like financial sector reforms, economic effects in the private sector participation in the Indian infrastructure sector. This chapter tries to portray the results in-depth that the researcher conducted with the PPP projects in India. As well as experts in the public agencies, national and regional PPP centers, law firms, and non-governmental organizations that where are involved in partnership governance. Using the participant's own words and opinions, the chapter captures their experiences in the exercise of PPP management and their perceptions of issues facing the partnerships. The chapter highlights the four key themes including India has emerged as one of the leading nations with the largest number of infra-PPPs in the world.

According to the database of the World Bank, India is the second most popular market for PPPs involved infrastructure sector. This section primarily addresses the issue of public sector reform, in India, within the context of the overall program of economic restructuring. Additionally, in the public sector reform, there is little consensus on objectives, instruments of change, and sequencing.

The main reform was the opening of 11 of the 18 sectors reserved for the public sector to private sector ownership. The areas that were opened to private sector ownership included aircraft and airlines, shipbuilding, telecommunications, electric power, iron and steel, heavy electrical equipment, and heavy castings and forgings (Sapat, 1999). For the full development of India, an adequate provision of quality social and economic infrastructure services is crucial. It could be said that the presence of an adequate infrastructure base can enhance India.

This chapter tries to answer the following questions:

Q1: What is the Policy up-gradation in the development of PPPs?

Q2: Does India is practicing the standard form of PPPs in Infrastructure?

4.1 Analyzing the Policy Background

After the British independence, GoI has been following the path of planned economic development (Mukherji, 2009). During the long period of more than seven decades, the government has implemented various policies and programs to achieve high economic growth with quality, improvement of the living conditions of people and reduce the incidence of unemployment and poverty and achieve balanced regional development (Ghosh, 2013). It has experienced, continuous democracy after the British liberalization. Despite differences in state ideologies, the Indian political leaders have retained the inherited British steel frame bureaucracy and made only incremental changes to its structures and procedures; however, India has significantly politicized the bureaucracy by exerting undue political pressure on and interference within the bureaucracy itself (Noor, 2018).

India is the fastest economy in the world, for further economic development infrastructure development became crucial. These days it has realized the need for developing its infrastructure to fuel its economic growth. The GoI has also realized that only the public funds would not be sufficient for overall economic development. Hence India rolled out one of the largest PPPs programs in the world over the first decade of the 21st century.

In the pursuit of economic development and growth, GoI adopted various alternative measures to provide and finance new economic and social infrastructure by corporatization, deregulation, privatization, commercialization, the commodification of all public services including healthcare (Medhekar, 2014). In this way, PPPs have emerged as a very feasible, viable, and growing mode of creating infrastructure in its geography (Kutumbale & Telang, 2014). For the overall development of India GoI realized that Infrastructure investments are essential to achieve economic prosperity, promoting growth, and enhancing well-being (Basílio, 2010).

It is well known that the developing countries will need much more investment, particularly private sector investment, to achieve Sustainable Development Goals (SDGs), specifically the goal of reducing poverty. Generally, the private sector involvement brings more funds, expertise, and efficiency to the development of projects in several essential areas like energy transport (roads, tunnels, bridges, railways, and airports). In the Indian context, there is the necessity for an adequate provision of quality social and economic infrastructure services crucial to realizing the full development potential of an emerging economy like India. Only adequate investment in the infrastructure sector can accelerate the growth of India's overall development. The following section discusses several topics that led the GoI to open the private sector participation in several sectors.

4.1.1 Role of Private sectors in Economic Development

Since 1947, India has faced great challenges like the lowest per capita income, high poverty ratio, and a marginal industrial sector representing only 13% of total economic activity, and a low saving rate of around 5% of GDP (Ali, 2016). To meet the enormous challenges, India embarked on an industrial strategy underpinned by the principles of import substitution and self-sufficiency. Before, the 1990s economic liberalization India's economic policies did not allow private entrepreneurs to flourish with public sectors. Hence, India followed the policy of import substitution in the 1950s and 1960s and a natural resource-led development policy in the 1970s (Verma, 2018). In the meanwhile, important pronouncements about economic policy have been made by the adoption of the two Industrial Policy Resolutions in 1948 and then in 1956 as also by the adoption by parliament of the socialist pattern of society as the objective of economic policy (Patel, 1957). These policies paved way for the increased importance of the private sector to the Indian economy in the 1990s (Krishna, 2001).

Respectively private sector investment has emerged as a major source of financing in India. It has estimated 22% of the \$225 billion infrastructure investment in the 10th plan (2002-07) came from the private sector, fortunately, investment went up to 38% in the 11th plan period.

4.1.2 Financial Sector Reforms and Characteristics

One of the principal concerns in financial policy in India is this: how reliably certain are the putative effects of a financial reform program? It is generally accepted that financial repression imposes possibly substantial costs on an economy, and that is desirable to eliminate these (Fry, 1997). In the Indian context, there is considerable uncertainty about the appropriate speed and extent of reform (Gibson & Tsakalotos, 1994).

In 1969, Prime Minister Indira Gandhi took the major steps of the nationalization of banks. The aims of the nationalization were “To control the heights of the economy and meet progressively and serve better the needs of the development of economy in conformity with national policy and objective. In this way, India embarked on substantial economic liberalization in the early nineties (Pandey & Patnaik, 2019). In the field of finance, the major elements of reform were the easing of capital controls to give Indian firms access to foreign capital, with a gradual liberalization of interest rates, and reduced state pre-emption of bank credit. On the one hand till the 1990s the financial sector in India was described as a classic example of “Financial Repression” (Mckinnon, 1973; Shaw, 1973). This sector was characterized, inter alia, by administered interest rates, large pre-emption of resources by the authorities, extensive micro-regulations directing the major portion of the flow of

funds to and from financial intermediaries, relatively opaque accounting norms, and limited disclosure with dominant public ownership (Rakesh, 2007). But there was a lack of compartmentalization activities in various financial intermediaries and strong barriers thwarted healthy competition in low levels of efficiency and productivity in the private sector.

According to Rakesh, (2007) the Capitalization levels were incredibly low due to a lack of commercial considerations in credit planning and weak recovery culture which resulted in a large accumulation of non-performing loans. Therefore, financial sector reform in India was introduced as a part of the structural adjustment and economic reforms program in the early 1990s ultimately, had a profound impact on the functioning of the financial institutions, especially banks (Gopinath, 2007).

Table 4.1 discusses the history of India's financial regulatory organizations. The RBI plays one of the vital roles in India's monetary policy. After that several financial institutions are established to promote monetary regulations. But in the current context for the PPPs infra- projects there are not any limited financial institutions from the central government.

Table 4.1: India's Financial Regulatory Organizations

Organizations	Establishment (Time Period)	Regulations
RBI	1935	Regulation of banks, debt management for the GOI. Regulation of OTC trading on government bonds, currency market, and currency interest rate derivatives (Gopinath, 2010). It also shares the regulation of corporate bonds and exchange-traded derivatives on currency or interest rates underlying with SEBI.
SEBI	1992	SEBI is established to protect the interests of investors in securities and to promote the development of and regulate the securities market and for matters connected therewith or incidental. Regulation of equity spot and derivatives.
IRDA	1999	Regulation of insurance
PERDA	2003	Regulations of pensions
DIPP	1995	Administers policy on Foreign Direct Investment

Source: Compiled by the Author

4.1.3 Monetary Policy

Monetary policy is the macroeconomic policy laid down by the central bank. It involves the management of money supply and interest rate and is the demand side economic policy used by the government of a country to achieve macroeconomic objectives like inflation, consumption, growth, and liquidity. According to Bernanke & Gertler, (1995) the channel for the monetary policy/transmission works through the supply side, and amplifies the more traditional “money channel”. For the process when the central bank tightens monetary policy by squeezing reserves, it generates a corresponding reduction in the supply of bank loans.

Monetary policy is a process through which monetary policy decisions affect the economy in general, and the price level in particular (Khundrakpam & Jain, 2012). Inside the Indian economy, the monetary policy has seen a great transformation both in terms of objective and instruments since quantity theory (Kumar, 2013). The policy has been at the forefront of macro-economic policy for every country on this planet. The objective has been varied across the globe, the standard goals of policies are full employment, economic growth, and stable prices (Friedman, 1984). As a result, on the theoretical side, capital formation and financial frictions play a key role in the transmission mechanism of several macro models (Cloyne, et al., 2018). The first and most important part of the monetary policy framework is the task mandated by the monetary authorities.

In the Indian context, the objective of monetary policy is defined as “*The preamble of the Reserve Bank of India Act, 1934 enjoins the central bank’ to regulate the issue of Banknotes and keeping of reserves to secure monetary stability in India and generally to operate the currency and credit system of the country to its advantage*” (Vasudevan, 2002p.1055-1061). Within this broad mandate, the RBI monetary policy pursues the twin objectives of price stability and ensuring the availability of credit to the productive sectors in the domestic economy. Also, the RBI is aimed to manage the quantity of money to meet the requirements of different sectors of the economy and to increase the pace of economic growth.

The RBI Act 1934: different interpretations and implications for central bank independence and transparency are defined as “.....to regulate the issue of banknotes and keeping of reserves to secure monetary stability in India and generally to operate the currency and credit system of the country to its advantage.”

After the 2008 Global crisis, considerable attention is being paid to analyzing central bank communication (Mathur & Sengupta, 2020). After the crisis, the monetary task is typically

specified in the central bank act (Bhattacharya, 2020). While assessing the monetary policy, it is reasonable to assert that it has been largely successful in meeting its key objectives in the post-reforms period since the early 1990s. In 2016, the monetary policy framework moved towards flexible inflation targeting and a six-member MPC was constituted for setting the policy rate (Dua, 2020).

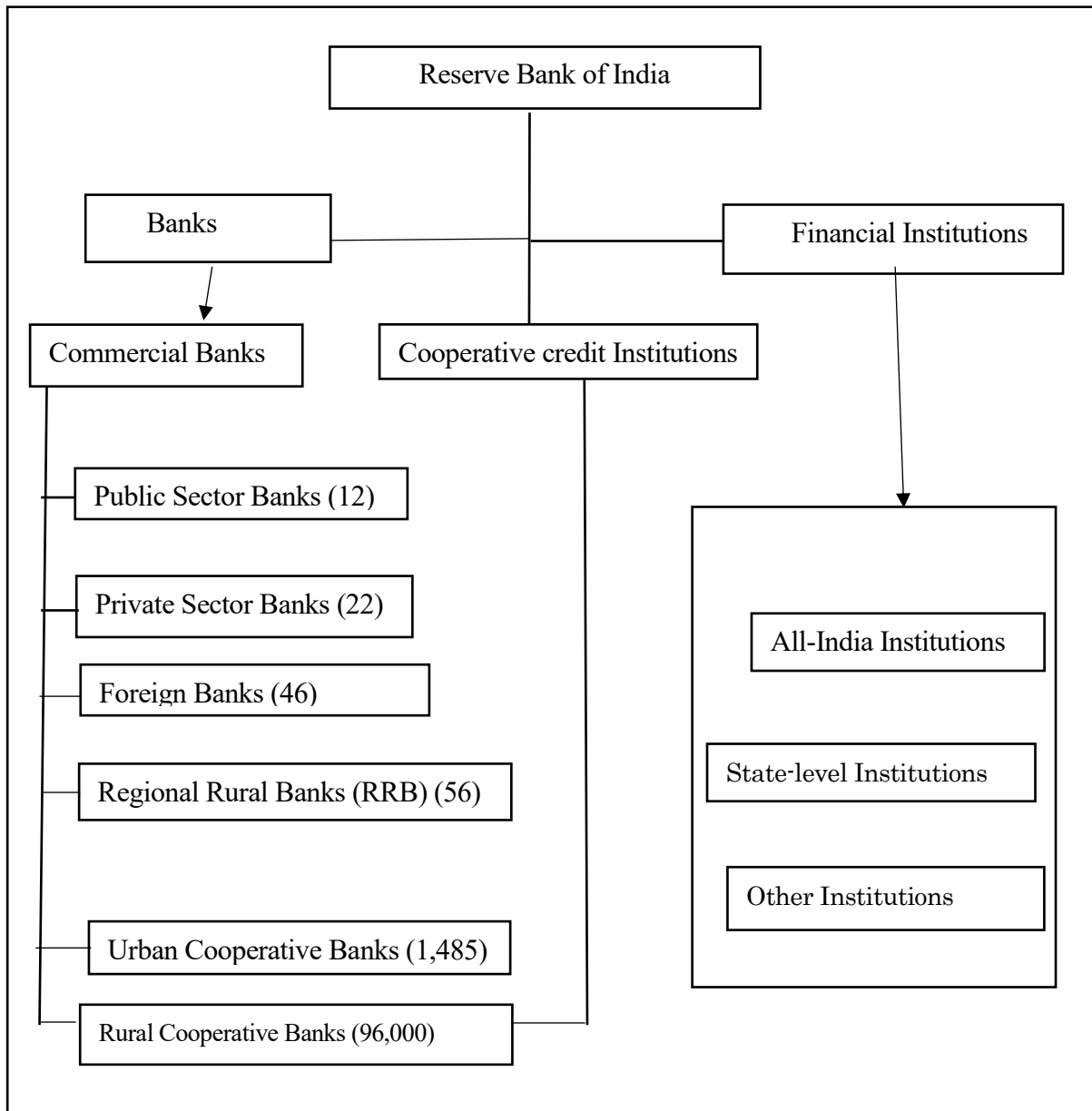
4.1.4 Bank Factors

In 1921, the banking system of India originated with the establishment of the Presidency Bank which led to the formation of the Imperial Bank of India for carrying out central banking functions (Singh & Sharma, 2016). After one decade in 1934, RBI was set up to perform the function of a regulatory body and was nationalized in 1949 (Das, 2014). At the same time, Banking Regulation Act was enacted providing powers to RBI to regulate, control and inspect the banks. In 1955, RBI acquired ownership of the Imperial Bank of India and it was renamed as SBI and nationalized its subsidiaries in 1959. Further, to increase the resilience and robustness of the banking industry, GoI nationalized 14 banks in 1969 and subsequently, eight more banks in 1980 (Das & Ghosh, 2006).

The Indian banking system comprises commercial and cooperative banks. In this way after the 1990s economic and financial sector reformation, the Indian banking system witnessed considerable improvement and the problems of NPAs reduced significantly (Pennathur, Subrahmanyam, & Vishwasrao, 2012).

Whilst the Indian culture is low risk-taking culture. Banks are an especially important financial institution that protects the cash-related risk of the general public (Shankar, 2016). In recent years Infrastructure sector is financed by the banking sector and has come out of its tradition. Several, banks are exploring the possibilities of introducing new financial innovations to financing infrastructure projects. Analyzing a broad range of potential factors on determinants of bank credit, researchers like Pham (2015) investigated the data on 146 countries over 1990-2013 suggesting the key factors restricting credit supply including nonperforming assets, capital requirements, and bank concentration. From the 1980s, major banking reforms have been introduced by the RBI to improve the strength, performance, and profitability of the banking industry (Brahmaiah & Ranajee, 2018). These reforms were aimed to improve the quality of regulation, create healthy competition, and efficient functioning of the banking industry. The Indian banking crisis, which started at the beginning of 2016, is often linked to corporate investment efficiency and the mid-2000s investment boom (Chahal & Ahmad, 2020). The banking system is, by far, the most dominant segment of the financial sector, accounting as it does, for over 80 percent of the funds flows through the financial sector (Planning Commission, 2021).

Figure 4.1: Structure of the Indian Banking Sector as of (October 2020)



Source: IBEF (2021).

Figure 4.1 However, the PPP infrastructure projects require equity and debt financing. The banks play a significant role in infrastructure financing but in point, they are challenged by inherent asset-liability mismatches because they typically have short-term liabilities and infrastructure financing involves long-term assets.

4.1.5 Public Sector Reform in India

Generally, the public sector consists of governments and all publicly controlled or publicly funded agencies, enterprises, and other entities that deliver public programs, goods, and services (Dube & Danescu, 2011). According to the World Bank IEG 2008 report, the public sector is the largest spender and employer in virtually every developing country, and it sets the policy environment for the rest of the economy (World Bank, 2008). Therefore, the effectiveness and efficiency of a country's public sector are vital to the success of development activities that lets the public sector reform at a certain time. In this way public sector reforms continue to be an integral part of the government's efforts to modernize the public service, making it more citizen-centric and responsive (The Commonwealth, 2016). The public sector in India has evolved over the past two centuries to adapt to contextualize changes like political framework, economic conditions, and people's expectations (Sinha, 2007). It also has a critical role in building up basic infrastructure and the core industrial base (Raipuria & Mehta, 1991). For the socio and economic development, the public sector should always be at the forefront to lead is a necessity given for social and economic structure that public sector can continue to play a dominant role without generating surpluses for its development.

The Indian public sector is composed of several numbers of segments. Firstly, the government itself, the central government, state governments, and local governments. The second is that of departmental enterprises and are directly run by government departments and are not separately incorporated. After the 1991 economic liberalization, almost all segments of the economic sectors are being restructured to make them more productive and competitive than they were in the past. The undergoing transition and the initial reforms consisted of fiscal consolidation accompanied by changes at the policy and regulatory levels in the trade, industrial, and financial sectors (Sharma, 2009). For these macro-level reforms to achieve their objective, enterprises must restructure to bring higher levels of efficiency and competitiveness.

4.2 Infrastructure Financing in India

Economic growth and investment in infrastructure go hand in hand. A growing economy needs constantly improved infrastructure to ensure that the production and exchange of goods (Anand & Sekhar, 2020). Infrastructure financing is one of the most complex and challenging dimensions of global financial architecture. FDI, equity and debt, bank lending and bond markets, foreign exchange, and derivatives must all come together understandably to unlock the underlying potential of infrastructure projects (Walter, 2016). With government budgetary support and major components of internal and extra-budgetary resources of public sector undertakings virtually capped, there is an increasing need for

borrowings for the government to meet the public sector infrastructure obligations at the central level. The central level is opened in the sources of borrowings and it could be international-bilateral and multilateral according to the purpose.

In India, there is a need for large and continuing amounts of investment, in all areas of the infrastructure sector (Mor & Sehrawat, 2006). Adequate infrastructure facilities at reasonable costs are necessary to achieve rapid economic growth. At present, there is a large gap between the demand for and supply of infrastructure. The GoI has embarked on a strategy to upgrade infrastructure services, including an increase in investment in infrastructure.

The effort to develop the financial sector in a way to catalyze more long-term financing into infrastructure has led in part to measures to develop the corporate bond market and facilitate bank lending into infrastructure projects. Financing PPPs infrastructure projects requires equity, debt, and instruments like project bonds (Rao, 2018). Several specialized institutions like as IFCI, followed by ICICI, IDBI, National Housing Bank, NABARD, EXIM bank, IREDA, SIDBI, REC, and REC and PFC are established.

4.2.1 External Sources of Financing

4.2.1.1 FDI's Role in Infrastructure

In the era of globalization and the investment from the outside of the country as a policy, FDI takes a vital part in the development of both developing and developed countries. Capital investment determines the levels and growth through changes in the production and consumption of goods and services (Duggal, 2014). In this way investment of capital is a vital determinant of economic growth for the countries. The policy of FDI provides a mechanism of capital investment in an enterprise in one nation by another enterprise in another nation (Vyas, 2015). Due to these issues, several countries had applied the FDI policy to improve the economic growth and development of the country.

Apart from being a critical driver of economic growth, FDI has been a major non-debt financial resource for economic development in India (IBEF, 2020). It is expected to play a vital role in attracting FDI inflows in several infrastructure sectors (Amilan, 2005). It aims to increase the efficiency of the rate of input as well as output (which includes an existing capacity of production along with the new capacity of production that will be generated) (Mansi, 2018). The FDI policy is characterized by its liberal, transparent, and investor-friendly nature. As per the extant policy, FDI up to 100% is allowed on the automatic approval route in most sectors. The extant of policy on FDI is available in the form of a consolidated FDI policy circular in the public domain and can be accessed at the

website of the Department of Industrial Policy & Promotion (<http://dipp.nic.in>). Under the Indian FDI policy the Indian company receives FDI under two major routes:

- 1) Automatic Route: FDI in several sectors/activities to the extent permitted under the automatic route does not require any prior approval either of the Central Government or the RBI.
- 2) Government Route: The FDI activities not covered under the automatic route requires prior approval of the government, which is considered by the FIPB, Department of Economic Affairs, and Ministry of Finance. This platform works on a single-window clearance system and allows the required FDI application to be approved. For the process, the application is sent to the concerned ministries by the portal, and the related ministries take the application forward as per prescribed procedures.

According to the Department for Promotion of Industry and Internal Trade Consolidated FDI Policy 2020 analyzes the FDI policies as follows.

▪ **FDI prohibited sectors are as follows:**

- a) Lottery Business including Government/private lottery online lotteries, etc.
- b) Gambling and Betting including casinos etc.
- c) Chit Funds
- d) Nidhi company
- e) Trading in Transferable Development Rights (TDRs)
- f) Real Estate Business or Construction of Farmhouses Real estate businesses shall not include the development of townships, construction of residential/commercial premises, roads or bridges, and Real Estate Investment Trusts (registered and regulated under the SEBI (REITs) Regulations 2014.
- g) Manufacturing of cigars, cheroots, cigarillos, and cigarettes, of tobacco or tobacco substitutes
- h) Activities/sectors do not open to private sector investment e.g. Atomic energy Railway operations.

- **FDI Permitted Sectors:** Table 4.2 shows infrastructure sectors which are accepted directly under the automatic route.

Table 4.2: Ceiling Under the Automatic route

	Sector	Percent
1.	Telecom	49
2.	Electricity generation, transmission, and distribution (except nuclear power)	100
3.	Roads and Highways	100
4.	Ports and Harbors	100
5.	Civil Aviation & Air Transport Services	100
6.	Railways	
7.	Agriculture Sector & Animal Husbandry	100
8.	Mining and Petroleum & Natural Gas	100

Source: Government of India (2020).

Table 4.3: Financial Year-Wise FDI Equity Inflows

S.No	Financial Year (April-March)	Total FDI Flows into India	% Growth over the previous year
F.Y-2000-01 To 2019-20		(In US\$ Million)	(In US\$ Terms)
1.	2000-01	2,463	-
2.	2001-02	4,065	(+)65%
3.	2002-03	2,705	(-)33%
4.	2003-04	2,188	(-)19%
5.	2004-05	3,219	(+)47%
6.	2005-06	5,540	(+)72%
7.	2006-07	12,492	(+)125%
8.	2007-08	24,575	(+)97%
9.	2008-09	31,396	(+)28%
10.	2009-10	25,834	(-)18%
11.	2010-11	21,383	(-)17%
12.	2011-12	35,121	(+)64%
13.	2012-13	22,423	(-)36%
14.	2013-14	24,299	(+)8%
15.	2014-15	29,737	(+)22%
16.	2015-16	40,001	(+)35%
17.	2016-17	43,478	(+) 9%

18.	2017-18	44,857	(+)3%
19.	2018-19	44,366	(-)1%
20.	2019-2020	49,977	(+)13%
Cumulative Total (From April 2000 to March 2020)		470,119	

Source: DIPP (2020).

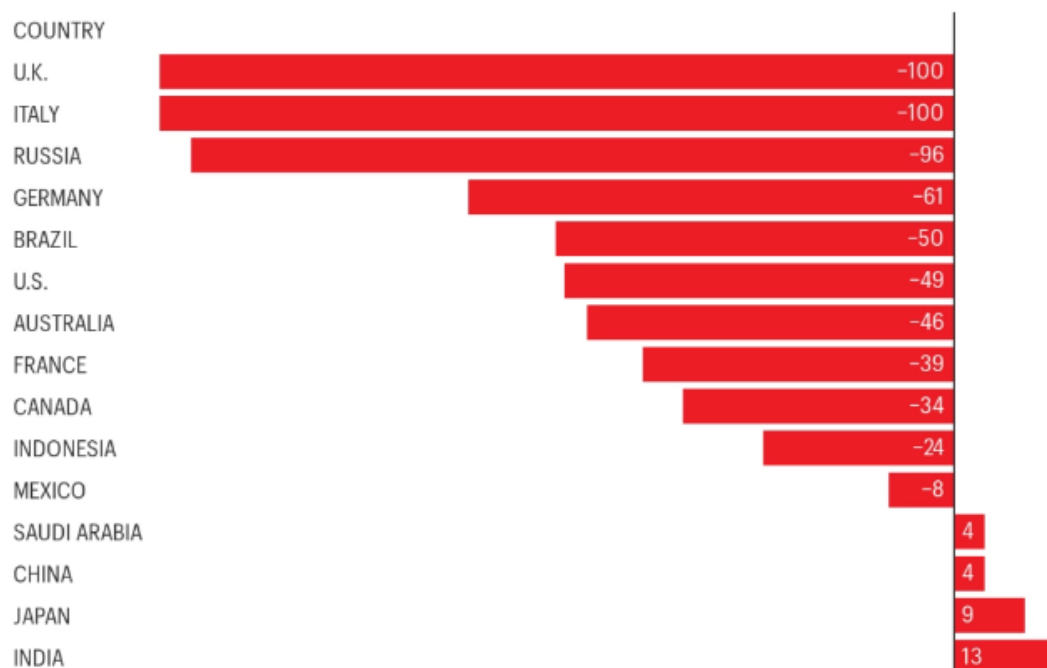
Table 4.4: Fiscal Years Exchange Rates

Year Rs (Fiscal Year)	Rs. The Equivalent of one US\$	Year (Calendar Year)	Rs. The Equivalent of one US\$
2004-05	44.95	2005	44.11
2005-06	44.28	2006	45.33
2006-07	45.29	2007	41.29
2007-08	40.24	2008	43.42
2008-09	45.91	2009	48.35
2009-10	47.42	2010	45.74
2010-11	45.58	2011	46.67
2011-12	47.95	2012	53.49
2012-13	54.45	2013	58.63
2013-14	60.50	2014	61.03
2014-15	61.15	2015	64.15
2015-16	65.46	2016	64.15
2016-17	67.09	2017	67.21
2017-18	64.45	2018	65.12
2018-19	69.89	2019	68.36
2019-2020	70.49	2020	69.89

Source: IBEF (2020).

Table 4.2, 4.3, and 4.4 shows that after the 1990s economic liberalization there is attractive flow of FDI in India. Several rules and regulations were amended to attract foreign investors in road, railways, health, and airports.

Figure 4.2: FDI inflows Compared to 2019-2020



Source: Elegant (2021a)

According to the UNCTAD report, figure 4.2 both China and India's FDI is increased by 13%. While china rose by 4%. Despite India's higher increase in terms of percentage points, the amount of money flowing to the two countries differs enormously. India attracts around \$57 billion while China attracted \$163 billion, more than any other country in the world. According to Rajneesh Narula, professor for international business regulation at the University of Reading stresses that "The FDI number has gone up by 3%, but it's a low base". Narula also pointed out that India's FDI stock is roughly a third of mainland China's. (Elegant, 2021b).

Table 4.5: Scenario of Sector-Wise FDI Inflows (US\$ million)

Sectors	2015-16	2016-17	2017-18	2018-19	2019-20
Manufacturing	8,439	11,972	7,066	7,919	8,153
Communication Services	2,638	5,876	8,809	5,365	6,838
Retail & Wholesale Trade	3,998	2,771	4,478	4,311	4,914

Financial Services	3,547	3,732	4,070	6,372	4,326
Computer Services	4,319	1,937	3,173	3,453	4,104
Business services	3,031	2,684	3,005	2,597	3,684
Restaurant and Hotels	889	430	452	749	2,546
Transport	1,363	891	1,267	1,019	2,333
Construction	4,141	1,564	1,281	2,009	1,937
Electricity and other energy generation, Distribution & Transmission	1,364	1,722	1,870	2,427	1,906
Real Estate Activities	112	105	405	213	564
Education, Research & Development	394	205	347	736	528
Miscellaneous Services	1,022	1,816	835	1,226	443
Mining	596	141	82	247	217
Trading	0	0	0	0	0
Others	215	470	226	102	137

Source: Reserve Bank of India (2020).

Table 4.5 shows the FDI inflows in sector wise. Under the report of the Reserve Bank of India, there is increasing moment of FDI in Infrastructure sector. But in education, health, mining sectors there is respectively decreasing moment. Retail and wholesale sectors show quite attractive remarks.

4.2.1.2 Debt from International Financial Agencies:

In India, both the Central and State governments can borrow funds from various international financial institutions to finance infrastructure projects. There is a trend of borrow funds from the World Bank, Asian Development Bank, and Japan Bank, or International Co-operation, etc. The advantage of borrowing from international entities is typically due to the long tenures of repayment, lower rates of interest, and large inflows of foreign currencies, the positive impact on the balance of payments, and the facility to import essential equipment required for the execution of infra projects. For example, there is an attractive High-Speed Railway project in India. on the topic of Japan's Foreign Aid 'Quality' Infrastructure Projects: The Case of the Bullet Train in India the Indian HSR project is going to be projected with an initial cost of US\$ 15bn funded largely through Japan's yen loan program. The loan is provided on generous terms with an interest rate of

0.1 percent and repayment over 50 years with 15 years grace (Jain, 2019).

The World Bank-funded projects worth US\$ 2.5 trillion per annum during 2011-15. It provided support to the IIFCL through financing PPP mode. Similarly, from the Asian Development Bank India received cumulative financial and technical aid of nearly US\$ 2.7 trillion.

BRICS Bank: The New Development Bank (NDB) also called BRICS Bank is likely to finance growth projects in the BRICS nations and other emerging nations. The NDB will have a capital of US\$ 10 trillion comprising US\$5 trillion as callable.

The Asian Infrastructure Investment Bank (AIIB) with an initial capital of US\$ 10 trillion and bank from 57 countries as its members are expected to offer enormous financing to the infrastructure projects in the Asian sub-continent.

4.2.1.3 Public and Private Investment

The relationship between public investment and private investment is one of the contentious issues in macroeconomics (Aschauer, 1989). Among the mainstream theoretical perspectives, Keynesian theory is the most popular among macroeconomic literature (Barik & Mohanty, 2019). According to the Keynesian theory “an increase in public investment through providing basic infrastructure needs, where infrastructure is believed to act as a stimulant for private investment, leads to economic growth”. The economic growth increases the income of households which promotes consumption and savings and, therefore, expansionary economic activities come out through the multiplier process. Several studies have shown different results regarding the relationship between public investment and private investment in the infrastructure sector.

The relation between public and private investment in the Indian infrastructure sector has been a topic of current debates. On the one hand, it is argued that by undertaking lumpy and risky investment, the public sector complements private investment by way of creating the necessary infrastructure and providing critical inputs (Pradhan, Ratha, & Sarma, 1990). Also, the public sector has a critical role in building up basic infrastructure and the core industrial base.

In the Indian context, before the 1990s, infra services were provided by the central government through its budgetary sources. However, insufficient government funding for the creation of an adequate infra services base, lack of commitment towards maintenance of the respective existing infrastructure, enormous time and cost overruns of the proposed

infra projects, and many other aspects resulted in serious obstacles to the infra growth. These demand and supply gap in infra service sector eventually led the Indian government to the private sector participation. In this way, the financing methods like Internal sourcing and external sourcing were started to give an importance.

4.2.2 Internal Sources of Financing

India has a reasonably high savings rate (Agrawal, 2020). The savings as a portion of GDP are 22.3 percent for households, 7.2 percent for corporate, and 1.3 percent for the public sector. Almost 50 percent of household savings are in the form of deposits in banks, leaving an insignificant portion in contractual investments (GoI, 2021).

- i) Government,
- ii) Commercial Banks,
- iii) Non-Banking Financial Companies,
- iv) Insurance Companies & Pension Funds,
- v) External Commercial Borrowings,
- vi) Equity and FDI from abroad.

The initiatives taken by the administration to organize funds for the infrastructure sector include the following:

- a) Infrastructure Debt Fund,
- b) Tax-free infrastructure Bond
- c) Amendment of the IRDA Investment Regulations, 2013,
- d) Enactment of the New Land Acquisition Act,
- e) Real Estate Bill,
- f) Increased role of a financial organization like IFCL, PFC,
- g) Simplification of FDI norms for Railways, Construction, and Defense,
- h) Relaxation of ECB policy (ICRA, 2016).

According to the Internal sources and financing the Table 4.6 discusses on the current trends in chief stakeholders in Infrastructure financing in India. The private sector concession and the equity providers plays the vital role in PPPs financing. The capital providers inside India and outside of India may varies in the rules and regulations. According to the financing methods the Author has discussed briefly in the section 4.2.2.1.

Table 4.6: Chief Stakeholders in Infrastructure PPP financing

Participants

Private Developers/Concessions

- **Government:** The GoI of India, both at state and local governments. They financially assist the infra-PPPs project through various tax exemptions, loan guarantees, project development fund, land acquisition, and utility shifting, cost on rehabilitation, partial payment of salaries to the team of independent engineers (during construction period), and Independent Consultant (during operation and maintenance period).
- **Banks and Financial institutions and Bank Syndicate:** provides required finance over the lifespan of the project.
- **Insurance & Pension Companies:** Both public and private sector insurance (including life and non-life) companies are finance infra projects.
- **Hedging institutions:** To offset foreign currency fluctuations.

Types of Financial Instruments:

- **Equity capital:** equity capital of private developers or SPV. In a few cases, the government will also participate in SPV and invests its equity capital. For example, in Bangalore International Airport PPP Project (Kempegowda International Airport); Both sides from the GoI AAI and Government of Karnataka equally invested to the extent of 13 percent equity.
- **Debt capital:** Commercial banks, Investment banks, Insurance companies, International Financial agencies (World Bank, IMF, ADB, JBIC).
- **Bonds:** NHAI, IIFCL, and other government agencies issue infrastructure bonds, which are normally tax-saving in nature and of a long maturity period.
- **Grant:** GoI or the local governments provide a capital grant called 'VGF (capital grant) for PPP infra projects-positive VGF, Negative VGF/premium.

Source: Compiled by the Author

4.2.2.1 Financing Methods

1) **Equity:** Infrastructure financing requires both equity and debt. Equity funding is necessary as the lenders need some cushion the cash flow from the project less operating and maintenance costs and the debt service requirements. It may include locally registered unit trusts or foreign equity funds. Most funds have an investment mandate or strategy that allows them to invest in certain industries, geographical locations, or to promote certain social issues. These investors are primarily interested in the prospect of earning dividends or appreciation on the investment (PPIAF, 2007). This mode of financing is especially important during a company or a project in the start-up stage. In this method of financing, investors make gains when there is an increase in the share price, as well as through the distribution of dividends by the company in which the investor has purchased as a stake. Since it is hard to argue that every infrastructure project uniformly benefits the entire population of the country (Mor & Sehrawat, 2006a). Under PPP projects, the term equity refers to the financial investment made by the concessionaires/ special purpose vehicles (SPV) with their capital. This capital is expected to partially cover the construction and/operation expenditure of the respective projects. In respect of some projects, the governments also join in the SPVs through their equity capital. Gardner & Wright, (2021a) express the equity can be contributed by sponsoring a variety of structures:

- Ordinary share capital.
- Sponsor's capital and subordinated loans.
- Multinational institutions, such as International Finance Corporation (IFC) and regional development banks. These institutions have recently started to participate in equity in private sector projects.
- Shareholder loans, which can provide two advantages, being (1) a tax shield through tax-deductible shareholder loan interest and (2) an optimized returns distribution profile, where shareholder loan repayments of interest and principal are not restricted by balance sheet retained earnings.
- A bank-funded equity bridge loan (which will be guaranteed by the Sponsors and typically repaid at project completion), the use of which optimizes shareholder's return profiles by delaying the timing of equity contributions to the project.

- 2) **Debt:** Debt financing is one of the financing options most pursued by companies (Harelimana, 2017). It refers to the borrowing of loans from other companies, banks, or financial institutions to support a business's operations. The loan principal is repaid at a later point in time, with some interest expenses being paid before the debt's maturity (Cheong, 2015). Debt is another vital source of PPP infrastructure finance in India.

The possible sources for debt capital can be divided into two main sources:

a) Commercial lenders:

- International Commercial banks
- Institutional investors (pension funds, insurance companies, and mutual funds)
- International bond markets
- Local banks and bond market
- Individuals

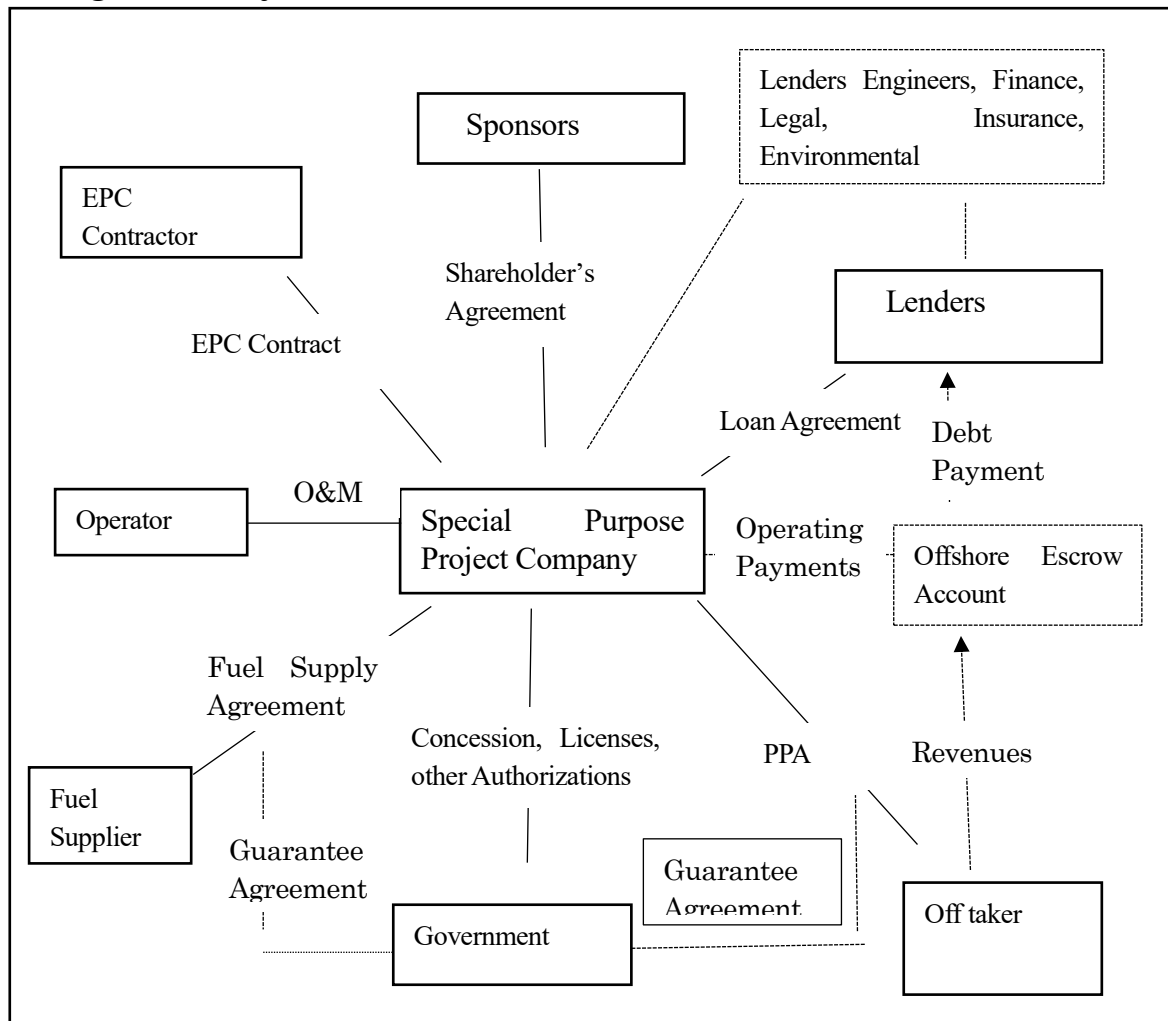
b) Commercial sponsors:

- Companies requiring the product or the service of the project
- Supplier's credits (to finance the supply of equipment and material)
- International agencies and regional development banks
- Contractor's
- Host government (Government agencies, and the central bank)

- 3) **Bond:** Bond is also a suitable financial product for institutional investors with long-term liabilities such as pension funds and insurers, which are moving toward increasing allocation into infrastructure largely due to the current low-interest-rate environment (Hyun, 2017). The Indian bond market is among the largest Asian bond markets. It has evolved over the last decade and has the potential to be a large and deep market for domestic and global issuers, intermediaries, and participants. The Indian bond market is dominated by government-issued securities. The central government and the state governments in India have consistently been incurring an aggregated fiscal deficit in the order of six percent (Manuj, 2018).

- 4) **Project Finance:** Project finance is the process of financing a specific economic unit that the sponsors create, in which creditors share much of the venture's business risk and funding is obtained strictly for the project itself (Pinto, 2017). Most private-sector infrastructure is project financed. This mode of financing is by and large special to the infrastructure sector. Project finance involves the financing of one specific project by an entity that is created with the sole purpose of design, build, and manage that specific infrastructure project. The following fig 4.3 illustrates the project finance structure.

Figure 4.3: Project Finance Contractual Structure



Source: DeJongh, 2009

From the figure 4.3 the Author has identified the following key players which plays the vital role in formation of PPPs projects in infrastructure projects:

- i) the project sponsors – a controlling stake in the equity of the separate company establishment. It has the purpose of undertaking the project that will typically be owned by a single project sponsor, or by a group of sponsors (Bonetti, Caselli, & Gatti, 2010).
- ii) the host government, and often state-owned enterprises – the project company will in most cases need to obtain a concession from the host government (Brealey, Cooper, & Habib, 1996).
- iii) the constructing and engineering firms
- iv) the legal specialists
- v) the accounting, financial, and risk assessment professionals
- vi) the lead arranging banks
- vii) the participating banks
- viii) the supplier and customers (Buscaino et al., 2012)

Project finance involves the financing of one specific project by an entity that is created with the sole purpose to design, build, and manage that specific infrastructure project. In traditional corporate finance, one company typically carries out multiple simultaneous initiatives that get financed as a portfolio of projects.

- **Banks:** Bank lending to PPPs infrastructure projects in India is one of the foremost sources of debt finance in post-liberalization. Credit disbursement to infrastructure as a percent of non-food credit has increased from 1 percent in 1998 to 12.37 percent in 2013 (cumulative increase). In absolute terms, the total bank credit to the infrastructure sector in India has increased from Rs 7243 crore in 2000 to Rs.839780 crore as of 2014.
- **Insurance Companies:** Insurance companies are the most appropriate medium for infrastructure financing and the contribution is significant. The Indian Insurance sector is broadly classified into public and private companies. The insurance outreach has surged from approximately 3 percent in 2001 to 5 percent in 2010 but fell to nearly 4 percent in 2011, due to the opening of the insurance sector to private players. In India, both the public and private sector insurance companies are classified into life and non-life insurance companies. In the public sector, the Life insurance Corporation for India (LIC) is the only institution providing capital.

4.3 Infrastructure Deficit

4.3.1 Infrastructure Deficit 11th Plan (2007-12)

India invested about \$ 500 billion in infrastructure in the 11th year plan period. This was roughly 2.2 times the investment in infrastructure in the 10th plan period (2002-07). The 11th five-year Plan emphasized the importance of investment in infrastructure for achieving sustainable and inclusive growth of 9% to 10% in GDP over the next decade (Mishra, Narendra, & Kar, 2013). The development of infrastructure is a central theme of the GoI in the 11th five-year plan. The 11th year plan documented that “the fast growth of the economy in recent years has placed increasing on physical infrastructure such as electricity, railways, roads, ports, airports, irrigation, and urban-rural water supply sanitation, all of which already suffer from a substantial deficit from the past in terms of capacities as well as efficiencies in the delivery of critical infrastructure services. The pattern of inclusive growth of the economy projected for the Eleventh Plan, with GDP growth averaging 9 percent year can be achieved.

The key to successful PPPs is that the public must perceive that PPP has added value in terms of the scale of services and quality and cost.

4.3.2 Infrastructure Deficit in 12th Plan (2012-17)

The 12th year plan was to invest \$1 trillion in infrastructure (CIRC, 2021). The Private sector share of total infrastructure investment was expected to rise to nearly half (47%) from slightly over a third (38%) in the 11th year plan. The share of the center as part of the public sector share in the overall infrastructure investment was likely to decline slightly to 31% in the 12th Plan from 35% in the 11th plan (NITI Aayog, 2021a).

The economic literature on the explanation of public deficits has been focusing on main two issues. On the first hand, the accumulation of public debts and on the other hand, the large observed cross-countries differences on public deficits and debts (Pinho, 2004). The infrastructure deficit is the result of a steady decline in government infrastructure spending, combined with a steady increase in the cost of building additional infrastructure. The national deficit is likely to grow as state and local governments, which account for a growing share of infrastructure spending, face budget cuts (Sherraden, 2011).

These days the large parts of the world suffer from a serious infrastructure deficit. The infrastructure deficit in India is widely recognized as a constraint on growth (Nehra, 2013). The fast growth of the economy in recent years has placed increasing stress on physical infrastructure such as electricity, railways, roads, ports, airports, irrigation, and urban and rural water supply and sanitation, all of which already suffer from a substantial deficit from the past in terms of capacities as well as efficiencies in the delivery of critical infrastructure services. Table 4.7 has outlined the current infrastructure deficit in various infrastructure sectors.

Table 4.7: Infrastructure Deficit Current Scenario

Sector	Deficit
Roads/Highways	Numerous projects,
Ports	Inadequate berths, low drafts, and bottlenecks in rail/road connectivity adding to costs and delays
Airports	Inadequate runways, aircraft handling capacity, and terminal buildings causing congestion and delays
Railways	Old technology, saturated routes, slow speeds, and low
Power	Power supply deficit stood at 0.5% at the end of March for the financial year 2019-20, Peak Power deficit stood 0.7%

Source: Compiled by the Author

4.4 PPPs Determining Indicators

Including economic factors, many government-related factors influence private sector participation in the provision of infrastructure services. According to the World Bank database 2020, the WGI project constructs aggregate indicators of six broad dimensions of governance, which are briefly explained in the table 4.8 and table 4.9. Table 4.8 highlights the concept of World Bank about the six dimensions. Further table 4.9 compares the Indian situation and with the determining indicators.

Table 4.8: Definitions of the six dimensions of governance concepts:

⚙	Control of Corruption: Refers to perceptions of the extent to which public power is exercised for private gain, including petty and grand forms of corruption, as well as “capture” of the state by elites and private interests.
⚙	Accountability : This reflects perceptions of the extent to which a country’s citizens can participate in selecting their government, as well as freedom of expression, freedom of association, and free media.
⚙	Political stability: The Term political stability reveals perceptions of the likelihood that the government will be destabilized or overthrown by unconstitutional or violent means, including politically motivated violence and terrorism.
⚙	Government effectiveness: This reflects perceptions of the quality of public services, the quality of the civil service and the degree of its independence from

	political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies.
⚙	Regulation quality: It reflects perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development.
⚙	Rule of law: It reflects perceptions to the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence.

Source: Based on World Bank, (2021)

This research attempted to verify the influence of mentioned six governance indicators on infrastructure investment (PPI) in India using the World Bank database. The correlation results about these factors are presented in the following table 4.9.

Table 4.9: Governance Indicator of India

Indicator	Percentage
Voice of Accountability	57.64
Political Stability and Absence of Violence	21.43
Government Effectiveness	59.62
Regulatory Quality	48.56
Rule of Law	52.40
Control of Corruption	47.60

Source: World Wide Governance Indicator (2021).

4.5 Analyzing PPPs Infrastructure in India

In India, there is no exact date and year which could speak of the beginning of PPPs, but it is said that the PPPs story began with private sterling investments in Indian railroads in the latter half of the 1800s (Singh, 2017). India had a few notable PPPs, in 1853 the Great Indian Peninsular Railway Company operating between Bombay Mumbai and thana now (thane), the Bombay Tramway Company running tramway services in Bombay (1874) even in the nineteenth century. The Great Indian Peninsular Railway Company, and the Power Generation and Distribution companies in Bombay and Calcutta (now Kolkata) in the early 20th century are some of the earliest examples of early Phase 1, historic PPPs projects in India (Charles, 2009). In the second phase the opening of the economy in 1991

there have been several cautious and tentative attempts to bring investments through PPPs in India. Most PPPs have been limited to a few cities like Visakhapatnam and Tirupur. A new wave of PPP movement started in India in the early 1990s. A Policy of opening electricity generation to private participation was announced by the central government in 1991, which set up the structure of independent power producers IPPs.

After the 1990s economic liberalization infrastructure has become a priority on the agenda for policymakers. For purpose, the term Infrastructure is defined variously to the coverage of sectors in India by various agencies/expert committees like the National Statistical Commission headed by C Rangarajan, Rakesh Mohan Committee (1996), CSO, FBI, IRDA, and Income tax department, and hence there is not uniformity. To address the problems for augmenting the infrastructure data from various data from the subsectors, to aggregate the total infra investment requirements and to fix the targets to formulate suitable policies, incentives and to take other necessary actions and to address infrastructure-related issues the GoI was very keen to develop a unique definition of infrastructure. This section intends to define the Indian infrastructure and determine the classes, types, sectors. The Government of India defines PPPs as, “A partnership between a public sector entity (sponsoring authority) and a private sector entity (a legal entity in which 51% or more of equity is with the private partners) for the creation and/or management of infrastructure or the public purpose for a specified time (concession period) on commercial terms and in which the private partner has been procured through a transparent and open procurement system”.

4.5.1 Academic Research of Indian PPPs

The Department of Economic Affairs (DEA), Ministry of Finance, Government of India has been leading the process of promoting PPPs in India. It has taken crucial initiatives to operationalize and institutionalize the GoI decision to promote the flow of private capital for accelerated infrastructure development. GoI defines “Public-Private Partnership (PPP) Project means a project based on a contract or concession agreement, between a government or statutory entity on the one side and a private sector company on the other side, for delivering an infrastructure service on payment of user charges (ADB, 2006a).

It is difficult to determine the exact date when the PPPs movement started in India. A new wave of the PPPs movement started at the beginning of the 1990s. As a firsthand policy of opening electricity generation to private participation was announced by the central government in 1991, which set up the structure of (IPPs) (Humbatov & Singla, 2016).

Undoubtedly, the PPP model has been gaining momentum in the context of India's infrastructure development since the late 1990s. However, very few empirical research studies are available on this issue. A brief discussion on available topic are shown in table

Table 4.10: Development of Literature on Indian PPPs

	Titles	Authors
1.	Public-Private Partnerships in the promotion of infrastructure in India an empirical study.	(Nagesha, 2015)
2.	Education shetra me niji sajedari navin chunotiyo	(Sharma S. , 2014)
3.	An Evaluation of Public Private Partnership for Infrastructural Development with Special Reference to Roads in Uttar Pradesh.	(Singh S. C., 2018)
4.	Interrogating the Governance Stalemate: The Politics of Urban water PPPs in Maharashtra, India.	(Deekshit, 2018)
5.	An analytical study on financial performance of selected road infrastructure companies in India with reference to public private partnership model.	(Chauhan, 2018)
6.	Three port triple bridge bi-directional control techniques for ZVS converter in high power application.	(Devarajan, 2017)
7.	Public-Private partnership in infrastructure a study on roads and highway projects in Andhra Pradesh.	(Mathur S., 2014)
8.	Public Infrastructure Investment Economic Growth and Fiscal Sustainability in India an Empirical Analysis.	(Varun, 2017)
9.	An alternative approach to the measurement of rural poverty in Tuticorin district.	(Iyyamperumal, 2014)
10.	An Economic Analysis of Public-Private Partnership in Madhya Pradesh Retrospect and Prospects.	(Singh S., 2017)
11.	Review an Evaluation of Public Private Partnership for Infrastructural Development with Special Reference to Bus Terminals.	(Singla & Modgil, 2020)
12.	Effect of Energy from Waste Technologies on The Risk Profile of Public-Private Partnership Waste Treatment Projects of India.	(Dolla & Laishram, 2020)

Source: Compiled by the Author

The following PPPs definitions have been used in the various policy documents of the GoI.

- A partnership between a public sector entity (sponsoring authority) and a private sector entity (a legal entity in which 51% or more of equity is with the private

partner) for the creation and/or management of infrastructure for the public purpose for a specified time (concession period) on commercial terms and in which the private partner has been procured through a transparent and open procurement system.

- PPPs project means a project based on a contract or concession agreement, between a government or statutory entity on the one side and a private sector company on the other side, for delivering an infrastructure service on payment of user charges.

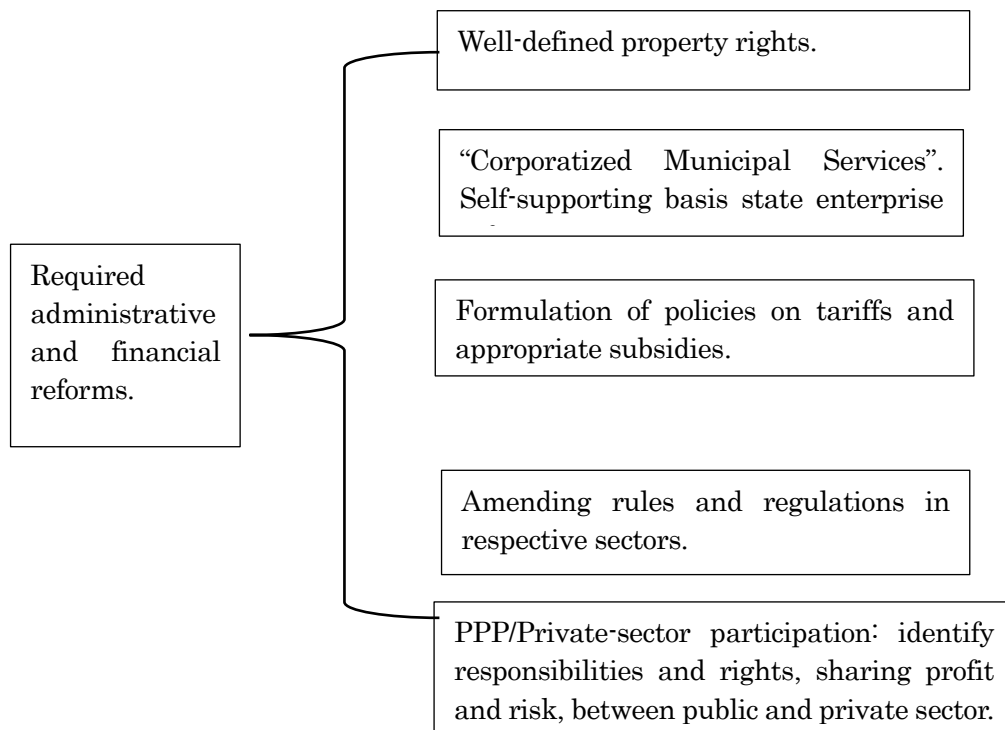
Summing up, PPPs involve a commercial transaction between a public and a private party by which the private party:

- Performs a function traditionally performed by the public sector or assumes the use of the public property.
- Assumes related construction, commercial, and operational risks.
- Receives a benefit in exchange for the above, either by way of public authority paying from its budget or revenue, or users or customers paying charges or fees for the service provided to them or a combination of these.

4.5.2 Development of Relevant Policies

In establishing PPPs in public infrastructure projects, an important role of the Central government will be to establish a National PPPs vision and paradigm that encourages private-sector participation. But this will be very complex in India; for the expansion and the efficiency of PPPs need to be accompanied by reforms of the administrative rules and regulations financial systems to promote the development of a market economy. The following figure shows the overall policy practiced.

Figure 4.4: PPP Policy Practicing Scenario in India



Source: (Chang, Memon, & Imura, 2003)

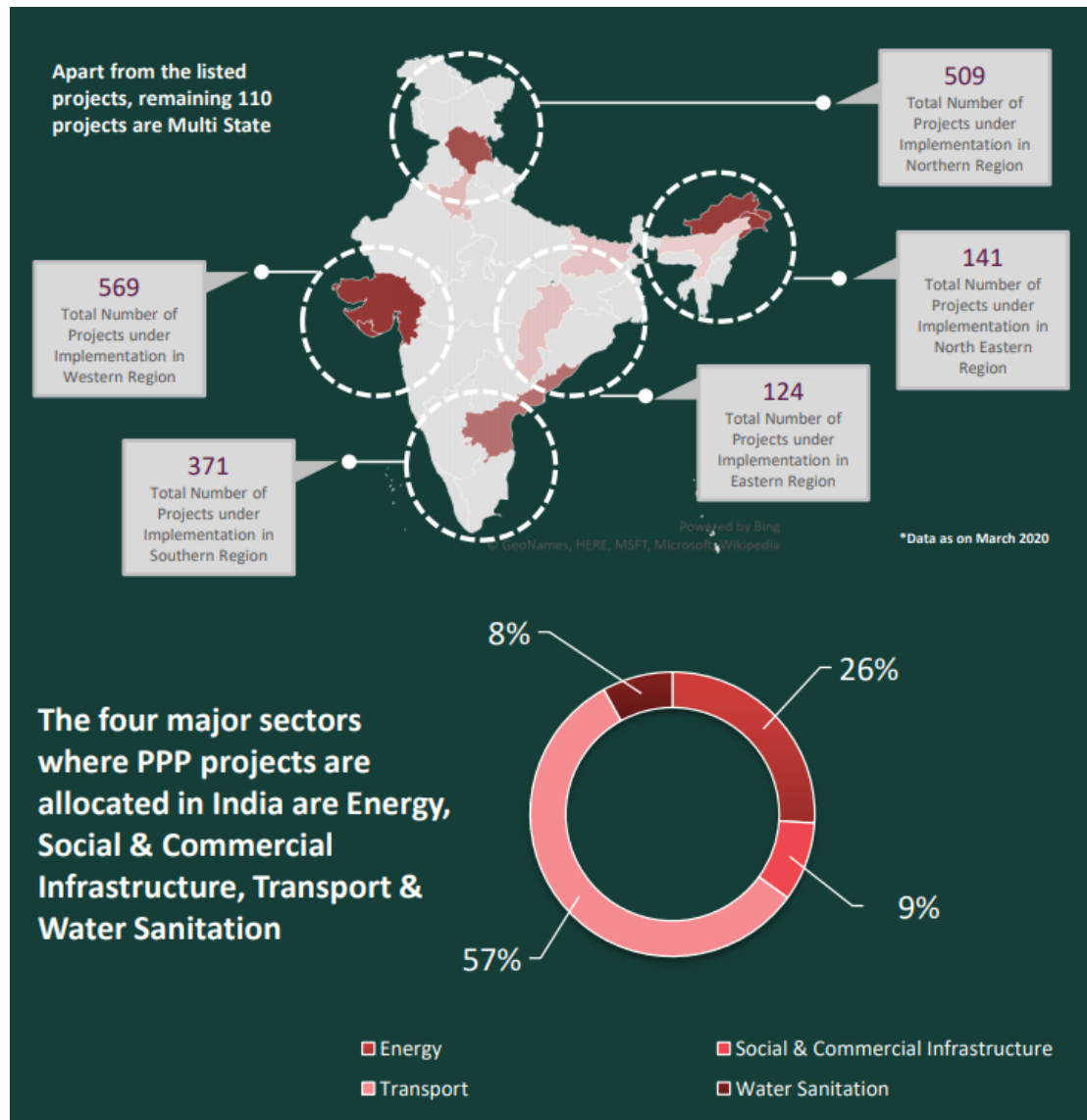
4.5.3 Current Status of PPPs

PPPs are the default option for implementing infrastructure projects in India. These days PPPs are gaining much more momentum across India. As part of achieving the objective of a ‘sustainable, faster and more inclusive growth,’ the 12th FYP envisaged the adoption of PPPs in many sectors including social infrastructure. The road sector is one of the leading infrastructure sectors in India’s PPPs program. In the 12th year plan period PPPs program witnessing a significant slowdown. According to the NITI Aayog, (2021b) Bidder’s response has been poor for projects bid on PPPs mode, and thus most of the projects in 2014-15 and 2015-16 have been awarded the engineering procurement construction (EPC) mode. The main cause of the slowdown in the aggressive bidding in the earlier rounds because the pre-qualification criteria made many applicants eligible for pre-qualification issues relating to land acquisition and grant environmental and forest

clearances.

The following figure 4.5 specifies briefly the infra sub-sectors chosen for PPPs both by the national and sub-national governments.

Figure 4.5: Current Status of Indian PPPs



Source: Eninrac Reports, 2020

As of March 2020, a total number of 1824 PPP projects worth US\$ 327 billion are in different stages of implementation in India. Out of these approximately 57% of the projects fall under the transportation sector, which in turn, is exposed to maximum risk due to coronavirus outbreak.

Table 4.11: Regional distribution of PPPs projects

Regions	Total number
Western Region	569
Northern Region	509
Southern region	371
North Eastern Region	141
Eastern Region	124
Total	1714

Source: Compiled by the Author

Table 4.12: Sector-wise distribution

Sectors	%
Energy	26
Transport	57
Water Sanitation	8
Social & Commercial	9
Total	100%

Source: Compiled by the Author

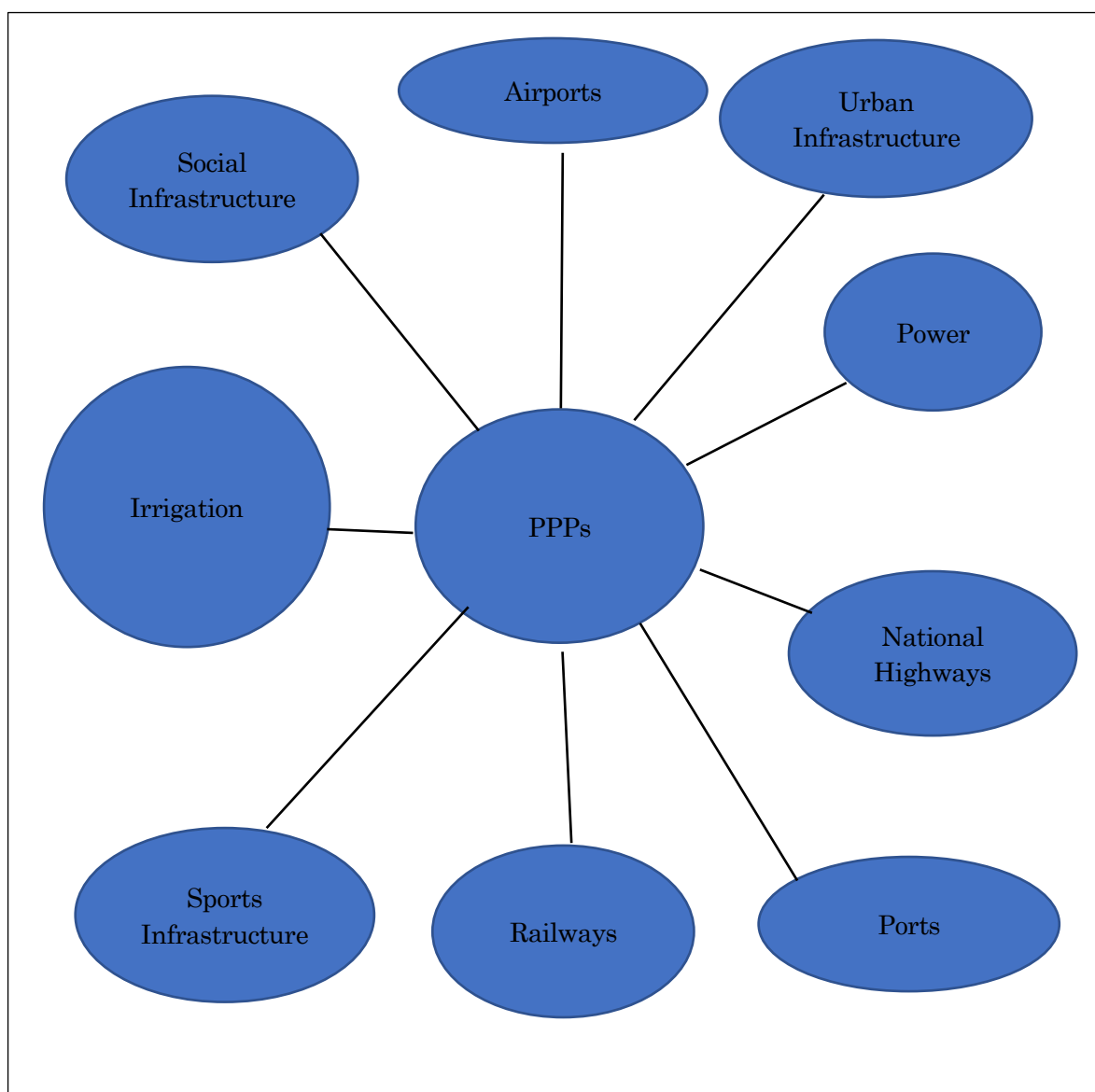
Table 4.11 and table 4.12 shows the PPPs projects by 2020. The western region shows the large number of PPPs comparing the other regions. Transportation sector like road, railways and airports are the choices for PPPs. Energy sector possesses the second demand for private sector involvement. Still in the Indian PPPs market there is lack of investment and attraction from private sectors. The table 4.13 shows the main stream private sectors that are involved in major PPPs projects.

Table 4.13: List of Major Companies in Indian PPPs by 2020

Organizations	Established by	Public	Private
National Highways Authority of India	1995	✓	
Central Public Works Department	1854	✓	
NHPC Limited	1975	70.95%	29.05%
NTPC Limited	1975	51%	49%
Indian Railways	1953	✓	
New Mangalore Port Trust	1974		
Navayuga Dhola Infra Projects Private Limited	2010		✓
Abellon Clean Energy Limited	2008		✓
Vizag General Cargo Berth Private Limited	2010		✓
Dhamra Port Company	1998		✓
Essar Limited	1969		✓
JITF Urban Infrastructure	2010		✓
A2Z Infra Projects Private Limited	2002		✓
AAI	1995	✓	
GMR Group	1978		✓
Reliance Infrastructure	1929		
TATA	1984		✓
NEC Group	NA		✓

Source: Compiled by the Author

Figure 4.6: PPPs in various sectors



Source: Compiled by the Author

Figure 4.6 briefly specifies the infra sub-sectors chosen for PPPs both in the central and state governments.

PPPs in education: PPPs in the education space serve to improve the quality of education service delivery. They bring together the reach of the government system with the innovation of the private sector to improve the quality of the system (FICCI, 2021). PPPs in education has increased dramatically over the last two decades across the world (Patrinos, Osorio, & Guáqueta, 2021). lthough governments remain the main financiers of education

in many countries private agents deliver a sizable share in education. Developed countries like UK, Australia, and Canada are eagerly involving in PPPs education sector. UK has utilized the DBFOT model. Under this model, the government is providing core services (teaching) while the private sector invests in the school infrastructure and provides related non-core services (school transport, food services, cleaning) under the contract. India has introduced a scheme for setting up of 2500 model schools under PPP mode. School infrastructure will be provided by the private entity like in UK (Model School Under Public-Private Partnership (PPP) Mode, 2021).

- GoI is willing to achieve universality of education but the limiting factor is the financial resources (Kumari, 2016). Under the PPPs education policy, the government agency, for instance, the ministry of education, purchases places for students in private schools. Payments are demand-driven, with the school paid for each student they enroll. The GoI plans to set up 2500 schools under PPPs during the 12th plan. The main objective of this program is to provide quality education to underprivileged children. This scheme has a vision of providing quality education to 40 million children including 25 million children belonging to the underprivileged sections of the society. Government initiative in terms of adopting PPPs in education is very much time as it is in line with its vision of providing world-class quality education to low-income families.

Aims and objectives of the PPP model in the Indian Education System as follows:

- To uplift the quality of the Indian education system.
- Helps to increase the enrollment ratio of the students.
- Improve the outcomes of the education system.
- To maintain the coordination between public-private and Government sectors.
- To reduce the overload of the government (Ansary & Behera, 2018).
-
- **PPPs in Health services:** India has a vast health infrastructure but is under-utilized due to inadequate management. Ranging from the large tertiary health centers, poor management leads to efforts to the government go in vain. Due to these contraries, the partnership between the public and private sectors has grown exponentially in a short period of time to management technique. The objective of this scheme is “to create a health care delivery mechanism comprising multi-special hospitals to meet the growing health care needs of the poor, and for supplementing human resources in the sector by setting up nursing schools and medical colleges (APMG, 2021).

- **PPPs in Sports Infrastructure:** The objective of the PPPs initiative in Indian sports infrastructure is “to utilize the existing facilities optimally throughout the year and also generate revenues for their operation and maintenance”. Realizing the importance of the potential infrastructural development, the Ministry of Youth Affairs and Sports (MYAS) in September 2016, has given sports infrastructure the status of an industry. The rationale behind this move is to encourage private investment in a public good that is susceptible to socio-economic externalities in a country with a young population (Mendiratta, 2016).
- **PPPs in the Power sector:** PPPs in the power sector are another significant development of power sector reform in India (Gangakhedkar & Mishra, 2012). The Ultra Mega Power Projects In the power sector India has independent regulatory institutions in the form of the Central Electricity Regulatory Commission (CERC) at the federal level and State Electricity Regulatory Commissions (SERC) at the provincial level.
- **PPPs in the Social infrastructure:** The 12th FYP lays a special emphasis on social sector development. The 12th five-year plan highlights that the limited available public domain resources are insufficient to achieve the physical targets envisaged and that the participation of the private sector is essential to bridge the resource gap. The private sector investment in the social sector under PPPs is aimed at ‘reduction in time and cost over-runs, improvement inefficiencies and better quality of performance’ (GoI, 2013).

4.5.4 Institutional Framework and Characteristics

Infrastructure projects in India are conceptualized and enacted at two distinct levels a) at the national level by the central government or its affiliated agencies and b) at the state and urban levels by the respective state governments or their associated nodal agencies (Mahalingam, 2010). The GoI has formed various institutions and committees for enabling PPPs procurement process and monitoring process. These organizations include the Committee on Infrastructure, Planning Commission including PPP Appraisal Unit (PPPAU) and, PPP Appraisal Committee (PPPAC). PPP projects can be implemented by central, state, or local authorities. The Indian PPP cell in the DEA under the ministry of finance is the central coordination of PPPs. The PPP cell is responsible for the approval of central sector PPP projects, proposals cleared by the PPP appraisal committee. The central government supports the creation of PPP cells at the state level (e.g., Andhra Pradesh,

Assam, Orissa, Uttarakhand, etc.). To streamline the appraisal mechanism and guidelines at the central level, the PPP appraisal committee was created.

After the 1990s economic liberalization, the PPPs model has emerged as the favored model of infrastructure project execution in India (Datta, 2009). To promote PPPs in the infrastructure sector, the GOI has established the following government institutions to support the PPP initiatives of the government of India. These are briefly discussed in the following table 4.14.

Table 4.14: Institutional Framework to Facilitate PPPs

Name	Role
High-level Institutions/ Committees	
Committee on Infrastructure (CoI)	The committee is established on August 31, 2004, chaired by the Prime Minister. Its functions are to initiate policies, develop structures for PPPs, and oversee the progress of key infrastructure projects (ADB, 2006). The committee has since issued guidelines for implementation of PPPs projects including bidder selection guidelines, specifications and standards for projects, model concession agreements, and financing plans. The CoI is supported by the Empowered Subcommittee, which formulates, reviews, and approves policy papers and proposals for submission to CoI, and monitors and follows up on the implementation of the decisions of CoI. One of the milestone recommendations of the CoI was to introduce an element of competition and transparency.
PPP Cell	The PPP cell is a Nodal agency, and it is mandated to administer. The GOI established a PPP cell in the Department of Economic Affairs (DEA), Ministry of Finance. PPP cell is responsible for matters concerning PPPs, including policy, schemes, and capacity building to all other matters relating to mainstreaming PPPs. It will have specialists from different areas (finance, law, engineering, planning, etc.) and will have a mixture of experience in both the public and private sectors. The PPP cell will be entrusted with capacity building, developing initial pilot projects to test PPP models, providing technical advice and support, communicating lessons from project evaluations, and coordinating the PPP program of the country (Adukia, 2021).
Cabinet Committee on	For the focused and top-level attention to infrastructure, a CCI was continued in 2009 under the chairmanship of the Prime Minister.

Infrastructure (CCI)	CCI reviews and approves initiatives for augmenting private investment in infrastructure projects. Unfortunately, CCI has recently been discontinued. EI and EC are for appraising and approving state-level projects.
PPPAC	<p>According to the decision of the Cabinet Committee on Economic Affairs (CCEA) in its meeting of 27th October 2005 a Public-Private Partnerships Appraisal Committee (PPPAC) has been set up comprising the following.</p> <ul style="list-style-type: none"> a) Secretary, Department of Economic Affairs b) Secretary, Planning Commission c) Secretary, Department of Expenditure d) Secretary, Department of Legal Affairs e) Secretary of the Department sponsoring a project. <p>The Committee would be serviced by the Department of Economic Affairs, who will set up a special cell for servicing such proposals. The Committee may co-opt experts as necessary. The procedure approved by the CCEA for the PPP projects is provided. The Ministry of Finance will be the nodal Ministry responsible for examining concession agreements for the financial angle, deciding on guarantees to be extended, and generally assesses risk allocation from the investment and banking perspectives. It would also ensure that projects are scrutinized from the perspective of government expenditure.</p>
Planning Commission	It is the apex planning body of government. It plays a pivotal role directly and through PPP Approval Committee (PPPAC) as a member and PPP Appraisal Unit (PPPAU), a unit created to appraise PPP projects and suggest suitable modifications. In addition, the Planning Commission is responsible for formulating an umbrella policy for the regulation of the infrastructure sector.
Advisory Council	The planning commission of GoI has adopted a scheme of advisory services like preparation of project agreements, project structuring, and technical assistance for project authorities by way of providing consultants.
Government ministries/ Nodal entities	
MoF	The Ministry of Finance is the Nodal ministry responsible for examining concession agreements from the financial angle, deciding on guarantees to be extended, and generally assessing risk allocation from the investment and banking perspectives.

Department of Economic Affairs (DEA)	PPP means an arrangement between a government or statutory entity or government-owned entity on one side and a private sector entity on the other, for the provision of public assets and/or related services for public benefit, through investments being made by and/or management undertaken by the private sector entity for a specified period time, where there is a substantial risk-sharing with the private sector and the private sector receives performance-linked payments that conform (or are benchmarked) to specified, pre-determined and measurable performance standards (Ministry of Electronics & Information Technology, 2020).
National Highway Authority of India (NHAI)	NHAI is the nodal agency responsible for the development of National Highways (NHs) and is responsible for awarding concessions for NHs. It has played a pivotal role in furthering PPP in the road sector through the preparation of the model concession agreement.
Rail Vikas Nigam Limited (RVNL)	RVNL is a wholly owned government SPV created to undertake project development, mobilize financial resources and implement projects about to strengthening rail connectivity across the Golden Quadrilateral and Port Connectivity projects. Golden Quadrilateral project involves strengthening and four lanning of high-density corridors of 5,846 Kms connecting Delhi-Kolkata-Chennai-Mumbai.
PPP Financing Mechanisms	
Viability Gap Fund (VGF)	To bridge the viability gap of infrastructure projects undertaken through PPPs, the government is implementing a scheme called the ‘Scheme for Financial Support to Public-Private Partnerships in Infrastructure.’ The VGF scheme is only applicable when the concession is awarded to a private sector company that is selected through open competitive bidding and is responsible for financing, construction, maintenance, and operation of the project during the concession period (Haldea, 2013). VGF is a special facility to support PPPs projects. This facility is housed in the DEA. Infrastructure projects are often economically justifiable but not viable commercially, at least in the initial years due to long gestation periods and economic externalities. The VGF scheme was notified in 2006 to enhance the financial viability of competitively bid infrastructure projects. Under the schemes, the grant assistance is managed. Around 20 percent of the project cost

	is provided by the Central government to PPPs project is undertaken by the central ministry.
Annuity scheme	Following the launch of the National Highway Development Program (NHDP) in 1999, the National Highways Authority of India (NHAI) had awarded certain sections of the Golden Quadrilateral (GQ) project to private operators under its Annuity scheme. Under this scheme, NHAI would pay the concessionaire's predetermined annuities for undertaking the construction, operations, and maintenance of the sections concerned.
IIPDF	IIPDF was announced in the budget for 2007-08 and was subsequently created with a corpus of US\$ 25 million to quicken the pace of preparation of a shelf of bankable projects which can be offered for competitive bidding. The procurement costs of PPPs, and particularly the costs of transaction advisors, are significant and often pose a burden on the budget of the Sponsoring Authority. Department of Economic Affairs (DEA) has identified the IIPDF as a mechanism through which Sponsoring Authority will be able to source funding to cover a portion of the PPP transaction costs, thereby reducing the impact of costs related to procurement on their budgets. From the Government of India's perspective, the IIPDF must increase the quality and quantity of 'bankable projects' that are processed through the Central or States' project pipeline (GoI, 2015). To develop the pipeline of the viable and bankable projects in the PPPs mode the GoI has established IIPDF (Madugula, 2010). This fund will assist 75 percent of project development expenses. The IIPDF was set up with an initial corpus of Rs. 100 Crore to provide financial support for quality project development activities. The sponsoring authority will thus be able to source funding to cover a portion of the PPP transaction costs, thereby reducing the impact of costs related to procurement on their budgets. The assistance from IIPDF would ordinarily be in the form of an interest free loan.
IIFCL	For financial support, the IIFCL is established in 2006 to provide long-term finance to viable infrastructure projects through the scheme for financing viable infrastructure projects through a Special Purpose Vehicle (SPV) called India Infrastructure Finance Company Limited. It is fully owned by GOI (Government of India

	Ministry of Finance, 2021). The IIFCL caters to the burgeoning financing gap in the long-term financing of infrastructure projects in the PPPs sector (G, Nagadevara, Naik, & Suraj, 2010).
Specialized infrastructure sector financial institutions	
Infrastructure Development Finance Company (IDFC)	IDFC was incorporated on 30 January 1997. It has been providing senior debt, subordinated bonds, and mezzanine products comprising preference capital and subordinated debt. IDFC is offering a ‘Take-out finance scheme’ it guarantees the bank to transfer the loan to another bank after an agreed time.

Source: Compiled by the Author

4.5.5 Governance System for PPPs

The current legal, policy, and institutional framework in existence in India reveals a somewhat lopsided and unsystematic approach to regulation across as well as within different sectors of the economy leaves much to be desired (GoI, 2008). The regulatory framework has evolved and developed independently within each sector. Political expediencies, as well as ministerial constraints have taken precedence often, ignoring the need for a common regulatory philosophy. Since the initiation of reform in the infrastructure sector, a piecemeal approach has been adopted in the process of creation of independent regulatory agencies largely on a sectoral basis, where each line ministry or state government, has constituted a regulator for a particular sector of the economy (Dar, 2010b). While evaluating of the existing institutional framework or regulatory governance via a rules-based approach for infrastructure in India, there are independent regulatory agencies, facilitating legislation or amendments to existing legislation.

India is a federal country with 29 states and 7 union territories. The PPPs act means “the principal components of the legal framework for PPPs, a clearly define eligible infrastructure types procurement types, procurement processes, the roles of the public and private parties, policy supports, etc.” (Kim et al., 2021). The PPPs Act lays out the PPPs basic plan and PPPs implementation guidelines which together address, in detail, the policy directions, procurement steps, and governmental supports. The following section examines the legal framework for PPPs decision organizations, procurement schemes, government support for land, finance and tax incentives, conditions. Overall, in the Indian context, the concept and implementation of PPPs are still very nascent in India. The Diverse models are being operationalized by multiple stakeholders in a wide variety of sectors. Governmental policies regarding regulatory, legal, and institutional framework are still

evolving (Phuyal, 2020). Following are three approaches followed by Indian states in structuring the legal and institutional frameworks for PPPs.

- Combining dedicated institutions with cross-cutting legislation.
- Establishing and using cross-sectoral PPPs advisory units to help line departments in the absence of overarching legislation.
- Relying on departments and sectoral agencies to build capacities.

While analyzing the legal and Institutional setup, Indian states can be grouped into three categories.

Category-I States

The state of Andhra Pradesh, Gujarat, Karnataka, Orissa, and Punjab have respectively developed enabling legislation and established dedicated cross-sectional institutions. These states have constituted specialized agencies and passed legislation to promote PPPs infrastructure in states. For example, Gujarat infrastructure development Board, the Andhra Pradesh Infrastructure Authority, and the Punjab Infrastructure Development.

Andhra Pradesh

Andhra Pradesh has enacted the Infrastructure Development Enabling Act, 2001. It extends to the whole of the State of Andhra Pradesh (GoAP, 2001). The Act facilitates private investors in securing the required administrative approvals and lays down provisions for arbitrations and fiscal regulation. The legislation covers the infrastructure of highways/bridges, airports, seaports, power, water supply, and sanitation, telecommunication networks, gas distribution, and waste management. It also covers urban infrastructure, including housing, urban development, medical facilities, and leisure facilities (ADB, 2021).

Gujarat

The state of Gujarat has enacted the Gujarat Infrastructure Development Act, (GID Act), 1999 (GIDB, 2015). This act provides a regulatory framework for private sector participation in financing, construction, maintenance, and operation of infrastructure projects. This Act provides transparent procedures for the selection of private developers and levying user charges for the facilities provided by the developer. The government had set up the Gujarat Infrastructure Development Board (GIDB) as a specialized agency under an ADB assistance. Later on, in 2006, the government of Gujarat the Gujarat infrastructure

development (Amendment Act, 2006) Gujarat Act No. 18 of 2006 is published, (GoG, 2006).

Karnataka

Karnataka has enacted an infrastructure policy, providing an option for PPPs and collection of user charges for the services provided by private investors. This policy applies to township development, commercial development with common-user facilities, water supply, and sewerage, waste-water recycling, underground drainage, waste management, etc. Infrastructure Development Corporation Karnataka limited is a cross-sectoral entity established by the government of Karnataka for project development activities.

Orissa

The Industrial Policy Resolution (IPR), 2001, of the state has accorded high priority for the development of physical and social infrastructure through PPPs. A Committee on Infrastructure has been set up to formulate strategies, identify projects, develop model documents, and establish processes and procedures related to PPPs. In pursuance of the provisions Orissa Public-Private Partnership Policy 2007, has been constituted an “Empowered Committee on Infrastructure” (The Orissa Gazette, 2007). Respectively, a PPP cell has also been created and a secretary-level 15 members ECI committee has been established. It has prioritized the approved shelf or projects, sanction, authorize expenditure for PPPs projects.

Punjab

The GoP has established the Punjab Infrastructure Development Board (PIDB) and passed the Punjab Infrastructure Act (PIA), 2002 (Punjab Government Gazette, 2021). According to the PIA, Act 2002, the PIDB acts as an apex empowered body and is responsible for the overall planning of the infrastructure sector and infrastructure projects inside Punjab. It undertakes the policy formulation and regulation, a single-window approval award of concession in infrastructure projects (Sawhney, 2014).

Category II States

The second category of states, such as Rajasthan, Uttaranchal, Kerala, and West Bengal have developed cross-sectoral facilitation entities but have not passed comprehensive legislation.

Rajasthan:

Rajasthan has established Rajasthan Project development Corporation (PDCOR) as a cross-sectoral agency to facilitate private investment in infrastructure, including policy advisory services to the state government and institutional support to structure and implement PPPs. PDCOR provides services for project development, formatting PPP and other innovative services for infrastructure projects (PDCOR Limited, 2021a). Apart from PDCOR, Rajasthan has the following other institutional arrangements to facilitate the PPPs infrastructure inside the state.

- Economic Policy of Reforms Council (EPRC): It is a state-level think tank comprising corporate leaders, eminent educationalists, specialists, and economists with the chief minister as Chairperson.
- Rajasthan Infrastructure Project Development Fund (RIPDF): has been created with an initial corpus of Indian Rs. 25 crores for supporting the development of credible and bankable PPP projects that can be offered to the private sector and the other infrastructure projects wherein GoI reimburses project development expenses to the department.
- Rajasthan Social Sector Viability Gap Funding Scheme: Attractively, the state of Rajasthan has notified for promotion of PPPs to provide VGF support on the following topic:
 - a) Capital subsidy
 - b) Interest-free or concessional loan
 - c) Land free of cost or at concessional price on lease basis
 - d) Building free of cost at a concessional price on lease basis
 - e) Subsidy in a lump sum or related outputs
 - f) Norm based recurring expenditure grants
 - g) Any other appropriate mode of providing support (PDCOR Limited, 2021b).

Rajasthan has been in a forefront of successfully implementing several road sector projects. It was the first state to formulate a policy for BOT road projects in 1994. The Rajasthan Road Development Act, 2002, encourages the private sector participation in the construction of financially viable bridges, bypasses, rail over-bridges, tunnels, etc.

Uttaranchal:

The Government of Uttaranchal has identified various sectors like tourism, energy, IT, transport, and horticulture as PPPs. It has developed an infrastructure vision with

professional support. It has established an Infrastructure Board chaired by the Chief Minister and two joint venture companies with IDFC and ILFS for developing PPPs projects.

West Bengal:

The government of West Bengal has established a cross-sectoral entity IWIN (ICICI-West Bengal Infrastructure Development Corporation Limited) which is a joint venture between ICICI Bank group and the Government of West Bengal. The first BOT project was announced in West Bengal was for Kolkata. The Government of West Bengal decided in 1993 to develop a leather complex, off the city, where the tanneries of Kolkata would be relocated. The project implementation was initiated in 1995 by the private partner, albeit with considerable support from the State government (Banerjee, 2013).

Kerala:

Kerala Industrial Infrastructure Corporation (KINFRA) is a government agency under the government of the Indian state of Kerala. KINFRA has formed a public-private joint venture company called Infrastructure Kerala Limited as an SPV to develop PPPs projects for infrastructure development. It undertakes the development of industrial states to nurture industrialization in the state. The Kerala Model refers to an interesting phenomenon in the Indian State of Kerala where despite economic backwardness it has achieved a high rate of HDI (Dongol, 2012).

Category III States

A third category of states, including Madhya Pradesh (MP), Maharashtra, and Tamil Nadu, have relied on sectoral and line agencies to develop and implement PPPs.

Madhya Pradesh (MP)

In Madhya Pradesh, initially, the MP works Department and then specially created MP Road Development Corporation (MPRDC) has acted as the agency for the development of road projects on a BOT basis in the state. In the process of developing projects, MPRDC has developed policy, guidance materials, and skills for facilitating PPPs in the Road sector. The Directorate of Institutional Finance (DIF) is the Nodal Agency for PPP projects in MP. The PPP cell under DIF offers all hand-holding in planning and bidding for PPP projects (PPP Cell, Government of Madhya Pradesh, 2021).

Maharashtra

In Maharashtra, The State Road Development Corporation (MSRDC) and Mumbai Metropolitan Region Development Authority (MMRDA) had developed policies for infrastructure development through private sector participation, including a “Policy on implementation of Road & Bridge Projects” through private sector participation.

Tamil Nadu

There is no state PPP policy in Tamil Nadu. However, the government of Tamil Nadu has enacted an Act in 1998 the “Tamil Nadu Transparency in Tender Act 1998” and relevant rules under “Tamil Nadu Transparency in Tender rules 2000”. This act and rules give a clear procedure for the departments for the procurement of goods and services, construction, etc.

4.6 State-wise Institutional Framework

A wide range of institutional structures and capacity approaches have been adopted for conceptualizing and procuring PPPs across states and central agencies, different variants of which have had some degree of success. At the state level, the three main approaches have been combining dedicated institutions with cross-cutting legislation, establishing and using cross-sectoral PPP advisory units to help line departments in the absence of overarching legislation, and relying on line departments and sectoral agencies to build capacities.

Table 4.15: Institutional Frameworks for various states

State	Framework law enacted	Nature of PPP unit established	Approval power over PPPs	Intensive Project-specific advice	Resource center	PPP guidance material	Funding for PPP preparation
Gujarat	✓	②	✓	✓	✓	✓	✓
Andhra Pradesh	✓	②	✓	✓	✓	✓	✓
Punjab	✓	②	✓	✓		✓	(b)
Madhya Pradesh						(a)	(b)
Tamil Nadu							(b)
West Bengal		④					(b)
Karnataka		④					(b)
UP							(b)
Orissa							(b)
Delhi							(b)
							(b)

Source: World Bank (2006).

Notes:

“PPP Unit” in this table means a cross-sectoral unit. Legend for this column: ①= unit is part of ministry or department.

②= autonomous or quasi-autonomous administrative unit. ③=public authority or publicly owned company (outside civil service) ④=public-private joint venture company.

(a) Sector-specific, (b) – limited to some sectors/agencies/projects

Above table 4.15 shows the state-wise PPPs and the availability of framework with the existed authority. Currently, various governmental institutions are established to make the PPPs market flexible. States like Gujarat, Andhra Pradesh, Punjab are the examples that PPPs are utilized and possess to compare the specific projects with international countries. Table 4.16 shows the state wise PPPs projects in Number and in amount.

Table 4.16: State-Wise PPP Projects as of December 2019

No	State	Number of Projects	Total Project Cost (in Rs Crore)
1	Andaman & Nicobar Islands (UT)	10	1,626.98
2	Andhra Pradesh	490	344,371.08
3	Arunachal Pradesh	176	297,2196.64
4	Assam	182	65,265.09
5	Bihar	505	244,809.40
6	Chandigarh (UT)	2	954.00
7	Chhattisgarh	232	267,942.56
8	Dadra & Nagar Haveli (UT)	3	172.53
9	Delhi (UT)	60	68,092.74
10	Goa	43	19,330.81
11	Gujarat	538	350,357.70
12	Haryana	122	97,622.24
13	Himachal Pradesh	178	109,244.35
14	Jammu & Kashmir	57	79,194.49
15	Jharkhand	323	106,638.47
16	Karnataka	698	310,234.61
17	Kerala	147	58,714.13
18	Madhya Pradesh	849	341,063.00
19	Maharashtra	1154	727,225.53
20	Manipur	13	19,380.85
21	Meghalaya	17	13,440.34
22	Mizoram	4	6,609.09
23	Multi State/Centre	377	1,433,647.45
24	Nagaland	7	5,988.58
25	Odisha	455	227,381.39
26	Puducherry (UT)	6	3,166.42
27	Punjab	147	59,358.86
28	Rajasthan	582	212,719.15
29	Sikkim	30	33,742.43
30	Tamil Nadu	459	341,081.08
31	Telangana	219	309,631.29
32	Tripura	36	17,055.28
33	Uttar Pradesh	547	394,125.26

34	Uttarakhand	130	63,732.44
35	West Bengal	444	181,869.06
	Total	9242	6,813,008.32

Source: DEA (2021)

4.7 Regulatory Framework

Since the 1990s, in terms of the regulatory framework, a series of the amendment of related laws has already started. For example, the government allowed private participation in the power sector in 1991, and the National Highways Act was amended in 1995 to empower private support (Singh S, 2017a). The Regulatory framework in Indian Infrastructure sectors has developed autonomously rather than by design. Political and ministerial preferences and suggestions from multilateral agencies have played a major role in the emergence of the infrastructure regulatory system in India. According to the researchers and related documents, there is no common philosophy or uniformity in regulation across infrastructure sectors in the country.

The main infrastructure regulatory agencies are Central Electricity Regulatory Commission/State Electricity Regulatory Authority of India (TRAI) in the Telecom sector; Tariff Authority for Major Ports (TAMP) in the Port sector and Airports Economic Regulatory Authority (AERA) in the Airport sector. In Addition, the Rail Tariff Authority has been approved by the government and is likely to be set up. Table 4.17, and table 4.18 shows the infrastructures and relevant legislations and the characteristics of regulatory authority.

Table 4.17: Regulatory Framework on Various Sectors

Sector	Relevant Legislations/Statutes	Regulatory Authority
Transport	No sectoral regulator	
Roads	National Highways Act of India, 1998, Under NHAI Act, 2000. The Control of National Highways (Land and Traffic) Act, 2002	No Independent regulatory authority. NHAI acts as the regulator as well as the operator.
Rail	Indian Railway Board Act 1905 Railway Act 1989	No independent regulator Railways act as the operator as well as the regulator.
Airports	Aircraft Act 1934 Airports Authority of India Act 1994	No independent regulator, proposal to set up one. AAI is the operator as well as the regulator.

Ports	Indian Ports Act 1908 Major Port Trusts Act 1963	No independent regulator. Tariff Authority for Major Ports (TAMP) has the sole function
Power/Energy	No sectoral regulator	
Electricity	Electricity Act 2003	Regulatory commissions at Centre and states with very extensive function and powers
Oil & gas	Petroleum and Natural gas Regulatory Board Act 2006. Petroleum Act 1934	Setting up of Petroleum and Natural Gas Regulatory Board under consideration for regulating the refining, processing, storage, transportation, distribution, and marketing of petroleum products.
Coal	Coal Mines Nationalization Act 1973 Coal Mines Conservation and Development Act 1974	No regulatory authority. Control by the ministry and through nationalized corporations.
Communication		
Post	India Post Office Act, 1898	No regulatory authority, proposal to create one.
Broadcasting	Prasar Bharti Act, 1990	No regulatory authority exists for radio
Cable Tv	Cable Television and Networks Regulation Act, 1995	Regulates the carriage and content of cable TV broadcasts. TRAI has the responsibility of tariff setting and interconnection for cable operators.
Telecom and Internet	TRAI Act, 1997	Responsible for the regulation of telecom and internet service providers.

Source: GoI (2008).

Analyzing the institutional framework from the perspective of national vis-à-vis State-level agencies and legislations once again come across a wide range of institutional structures and disparate approaches that have experienced varying degrees of success (ADB, 2006a).

Table 4.18: Characteristics of Regulatory Governance

Parameters for regulatory governance of infrastructure	India
Existence of independent regulatory agencies and legislations	Independent regulatory authority exists for the telecom sector in the form of the TRAI.
Existence of a cross-cutting and comprehensive PPPs law	No such law is in existence.
Existence of cross-sectoral agencies	Cross-sector regulatory institutions with enabling legislations exist in 3 states. No cross-sector agencies at the national level.
Existence of national vis-à-vis State-level agencies	Except for the TRAI, there is no national-level independent regulator. The NHAI had developed operational and regulatory expertise at the national level. Rail Vikas Nigam Limited a special purpose vehicle for encouraging PPPs in railways is another initiative at the national level.

Source: (Dar, 2010b)

4.8 National Policies on Infrastructure PPPs

GoI has introduced several fiscal measures through the formulation of special policies, the establishment of institutions to address the issues of various infrastructure inadequacies to encourage private sector participation. India has emerged as one of the leading nations with the largest number of PPPs in the world. As part of addressing the various infra bottlenecks and promoting PPPs, both the Central and State governments have initiated many policy measures at the aggregate and sectoral levels. This section discusses the opening up of the economy in the early 1990s, the GoI and other several states have taken multiple steps to encourage PPPs investment. A few of them are listed below:

- Setting up of a Committee on Infrastructure on August 31, 2004: the committee is chaired by the Prime Minister. Its functions are to initiate policies, develop structures for PPPs, and oversee the progress of key infrastructure projects.
- Publishing of documents on PPP by the GoI.
- Viability Gap Funding scheme: The infra-sectors identified for the VGF scheme are Roads, bridges, railways, seaports, airports, inland waterways, power Urban transport, water supply, sewerage, solid waste management, and other physical infrastructure in urban areas. Several other sectors are added on the approval from the finance minister. VGF is to ensure funding of large-scale infrastructure projects, where commercial viability is difficult to establish, especially at the beginning of the project.
- Setting up an Empowered Committee for speeding up the approval mechanism and process for PPP projects.
- Setting up a committee on knowledge management and dissemination.

4.8.1 Development of NITI Aayog

The National Institution for Transforming India, also called NITI Aayog, is the premier policy think tank of the government, providing both directional and policy inputs. Infrastructure and PPPs division has been created within NITI Aayog to oversee the development of the PPP market and provide policy guidance to the government. NITI Aayog has prepared a brief on strengthening the PPP policy framework and has provided its recommendations to the Kelkar Committee for their consideration.

NITI Aayog has recently taken the initiative to offer advice and guidance to the states for the implementation of Infrastructure projects. A Project Management Unit (PMU) under the development support services for states program of NITI Aayog has been set up to handhold states in identification, prioritization, selection, and Implementation of PPP projects. Finally, a list of 10 big infrastructure projects that can be developed under PPP model will be prepared for implementation. Further, the government has decided to do away with the practice of preparing annual budgets based on five-year plans. Now there would not be any Five -Year Plans (FYPs). In Conclusion, it can be said that the Kelkar Committee, in its effort to make the PPP regime is extremely friendly to the private sector.

4.8.2 PPPs Committees and Institutions

In October 1994 the GoI constituted an Expert Group to consider issues related to the commercialization of infrastructure projects including institutional arrangements, legal frameworks, and financial arrangements that would facilitate the free flow of resources to infrastructure the group submitted a report in June 1996 as Dr. Rakesh Mohan Report on Indian Infrastructure (Rakesh, 2003). Among the initiatives of the government to promote the development of infrastructure in general and private participation through PPPs, the first one is the establishment of several committees and institutions (table 4.17) to take all the appropriate policy decisions relating to PPPs.

In May 2015 the GoI has constituted a nine-member committee under the chairmanship of Vijay Kelkar to revisit and revitalize the infrastructure PPP model. The government has requested the panel to investigate four important aspects of infra-PPPs.

- a) Review the past infra -PPPs and their experience.
- b) To track the problems or difficulties involved in the infra-PPP project's risk-sharing practiced between the government and the developers in the past and to suggest appropriate methods to address this issue.
- c) Recommends measures to improve PPP contractual agreements by employing the international best practice.
- d) Government has asked to propose measures to improve the capacity building of government agents for an efficient implementation of projects under PPP mode.

One should wait for a while to see the recommendations of the committee, their effective implementation, and the potential impact of such recommendations on the future growth of infra-PPPs in the country.

Rakesh Mohan and the expert committee, thoroughly examining the infrastructure sector situation and made several recommendations through the 'India Infrastructure Report' 1996, by G Nagesha in his thesis 2015, that has highlighted the major recommendations as follows:

- The expert committee highlighted the existing infrastructure deficit prevailing in the country across all infrastructure sub-sectors. There are examples of efficient provision of infrastructure services by governments, by and large, governments have not been effective supplies in many services.
- To bridge the rapidly increasing infrastructure deficit (the gap between demand and supply) the committee suggested policy reforms to make the best possible use of the private sector financial, managerial, and technological expertise to minimize infrastructure deficit suitably.

- The committee has also recommended the commercialization of infrastructure projects.
- The committee pointed out that government support was essential to promoting PPPs in the development of Indian infrastructure during the transition period from 100 percent state investment in infrastructure towards a maximum possible private sector participation.
- The expert committee explained that the goal of infrastructure policy is to effectively deliver infrastructure services of high quality and at low prices, to households and firms in the country. The success of policies in infrastructure must be assessed by the quality, quantity, and prices that end-users pay for these services, and comparisons with global standards on each of these three fronts.
- The expert group strongly recommended that the government set up an autonomous regulatory body for each infrastructure sector with sector-specific enactments, on the lines of SEBI. The roles of the regulator and the operator must be separated in every sector. It also suggested the need for a transparent regulatory framework to negotiate and implement BOT-type projects.

Table 4.19: Timeline of Important Policies

1996- Rakesh Mohan committee on infrastructure financing
1997-2002-9 th Five-year plan-exclusively focused on infrastructure-private sector participation through PPPs
Committee on Infrastructure (COI)-August 2004
Cabinet Committee on Infrastructure (CCI) -July 2009
To address the construction time and overruns-all NHAI's from phase III started development through BOT PPPs
2005-Public Private Partnership Approval Committee (PPPAC)
2006-VGF- Viability Gap Funding (VGF)
Empowered Institution (EI)/ Empowered Committee - To approve VGF
2006-India Infrastructure Finance Corporation Limited (IIFCL)- for innovative, cost-effective methods of financing infrastructure projects.
Public-Private Partnership (3Ps) Institute proposed in the 2014 union budget for promoting PPPs in the country by the Finance Ministry, GOI
Vijay Kelkar committee to revisit and revitalize the infra-PPPs (May 2015)

Source: Compile by the Author

Table 4.19 attempts to track the policy impacts of governments to critically analyze various vital policies both at the national and sub-national levels. Since the 1990s the GoI has introduced, from time to time, various fiscal measures through the formulation of PPPs policies and the Kelkar committee plays a vital role. The reasons of evolving the Kelkar committee and its critiques are discussed below.

- **Kelkar Committee in Promotion PPPs**

In 2015 the GoI has constituted a committee on revisiting and revitalizing the PPPs model chaired by Dr. Vijay Kelkar (GoI, 2015). The term of reference of the committee included a review of the PPP policy experience, including the variations in contract content, analysis of risks involved in PPPs projects in various sectors. The main motto of the Kelkar committee is to analyze the existing framework of sharing of risks between the project developer and the GoI. Similarly, Kelkar Committee proposes design modifications to the PPP contractual arrangements based on the Indian experience, and international best practices. Also, it suggests measure to improve capacity building in government for effective implementation of PPPs projects (Kelkar, 2012). Overall Kelkar Committee tries to make the PPP regime extremely friendly to the private sector.

- **Critique of the Kelkar Committee report on PPPs:**

The Kelkar committee's report on indirect taxes shows impressive clarity in its tariff proposals and provides ample evidence of much thought has gone into the framing of the recommendations. However, in respect of administrative and procedural aspects, the committee has chosen to ignore many of the useful suggestions (Mukhopadhyay, 2003). Similarly, several researchers, and scholars, states that the Kelkar Committee report is unexceptionable in divesting equity and monetization of public sector assets after construction is complete. The project risks come down considerably after project completion and when the project is in the operation phase. Due to the project's low volatility and the expected returns are not correlated with business cycles. Therefore, such projects that are in the operation phase may be ideal for investment by pension, insurance, and sovereign wealth funds whose investment horizon is long-term and look for returns with these characteristics. In National Investment and Infrastructure Fund (NIIF), the sovereign wealth fund of India is creating a sub-fund for the road sector with a corpus of Rs. 5,000 crores (Times of India, 2016).

The Critiques of Kelkar committees are summarized as follows:

- India has among the highest number of infrastructure sectoral regulators. There

should be a separation of policy formulation, operation, and regulatory functions.

- Independent sectoral regulators are neither necessary nor sufficient for regulatory credibility.
- Recommendation about renegotiations problematic and risks bringing the gains from Indian PPP experience.
- The report pitches for independent sectoral regulators for all the sectors that are going in for private investment.

4.9 Analyzing PPPs Process

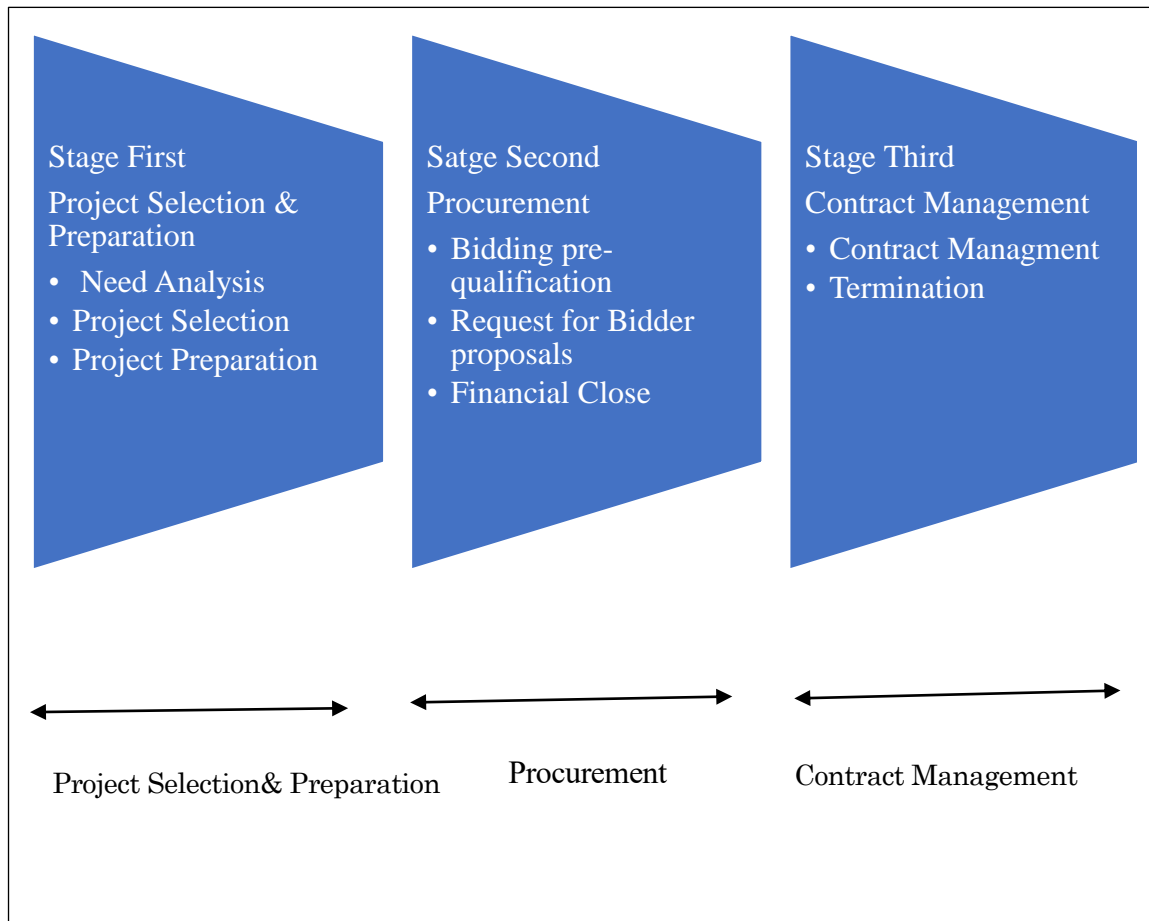
The process of developing a PPPs is complex and dynamic throughout the project's life cycle of project identification, preparation, procurement, implementation, transfer phases (Bao, Chan, & Darko, 2018). This section takes a deep dive into the various aspects of structuring multiparty PPPs projects and provides an overview of the standard process in this area. Additionally, it offers a close look at the Indian way of practice and its consequences.

4.9.1 PPPs Designing

Rightly structured PPPs projects are expected to promote on-time and within-cost delivery of projects and provide improved quality services at reasonable costs. For these reasons, private capital has been courted by countries all over the world to fund public projects and provide public services in economic infrastructure (Stadtler, 2012). The expanding demand for services combined with the fiscal resource crunch and concern for the quality of public services has often compelled governments to turn to the private sector for the provision of these services. Whilst the private provision of public services has meant that the selection of these providers is extremely important. The ultimate responsibility for the provision of these services rests with the GoI because any poorly performing private provider can cause considerable grief to the government. Therefore, the selection of credible project sponsors is important in large capital outlays for providing essential infrastructure services for a long-term contract.

Figure 4.7 outlines the particularities in PPPs designing in India and embeds them into the wider field of the network.

Figure 4.7: Key Stages of PPPs Transaction in India



Source: PPIAF (2021).

4.9.2 Bidder Prequalification (Request For Qualification)

In simple language Bidding is the process of setting a price, the bidder is an interested client to pay for the project (S & M, 2017). The bidding and award procedures vary across countries and sectors thus contextual empirical research are required for crafting the right prequalification procedures for a given country (Dolla & Laishram, 2017). The bidding process aims to maximize the value of money by creating healthy competition among bidders.

According to the nature of project, the bidding process and the elements could differ in their characteristics. The Indian government has laid down the following principles to guide the prequalification process of PPPs projects.

- I. The selection of bidders must be fair and transparent

- II. Selection should be carried in two stages
- III. Only credible bidders should be prequalified
- IV. Recommend, though not imposes, to shortlist around 6-7 prequalified bidders to submit the financial proposals in the RFP stage to secure high quality and competitive bids.
- V. Recommend setting the technical and financial capacity limits.
- VI. Recommend usage of separate criteria for technical and financial capacity evaluation.
- VII. Experience has been recommended as a proxy for technical capacity assessment while net-worth could be approximated as a proxy for financial capacity.
- VIII. Technical evaluation should precede the bidding stage and restrict the bidding stage to financial bids only.
- IX. Social infrastructure projects can amend these principles to suit the sector-specific requirements.

Table 4.20: Illustrative Schedule for Bidding Process in India

	Event description	Date
1.	Last date for receiving queries	25 days from the date of issue of RFP
2.	Pre-Bid meeting-1	To be specified
3.	Authority response to queries latest by	35 days from the date of issue of RFP
4.	Pre-Bid meeting-2	To be specified
5.	Bid Due Date	To be specified
6.	Opening of Bids	On Bid due date (at least 50 days from the date of issuer of RFP)
7.	Letter of Award (LOA)	Within 30 days of Bid Due to Date
8.	Validity of Bids	120 days of Bid Due Date
9.	The signing of Concession Agreement	Within 30 days of LOA

Source: Compiled by the Author

One of the first decisions to make is whether it would be single-stage bidding or a two-stage bidding process. The bidding process for PPPs projects is divided into two stages: The first stage is Expression of Interest (EoI) Single-stage bidding refers to the process whereby bidders present both technical and financial proposals at the same time, which are

evaluated together to select the preferred bidder. The Second Stage is referred to as the Request for Proposal (RFP) or invitation of financial bids, the bidders engage in comprehensive scrutiny of the project before submitting their financial offers.

4.9.3 Procuring Model Documents

While creating a standardized framework there is a necessity for transparency in the allocation of risks and providing clarity and predictability in the obligations of the Concessionaires in minimizing the possibilities of disputes. It enables robust competitive bidding for individual projects with a reasonable commonality in approach across projects. The GoI has adopted a standardized document such as the Model Concession Agreement, RFQ, RFP, and manuals of standards and Specification have streamlined and accelerated decision making and implementation. The Standardized documents are briefly described below:

Two-stage process

The bidding process for PPP projects is divided into two stages. The first stage is generally referred to as Request for Qualification (RFQ) or Expression of Interest (EOI). The objective is to pre-qualify and short-list eligible bidders for two-stage of the process. In the second and final stage, which is generally referred to as the Request for Proposal (RFP) or invitation of financial bids, the bidders engage in comprehensive scrutiny of the project before submitting their financial offers (GoI, 2021).

1) Request for Qualification (RFQ)

It is an international best practice to have a technical evaluation in the RFQ stage. A two-stage bidding process has been adopted for PPPs projects in India. In the first stage of the RFQ stage, the eligible and prospective bidders are pre-qualified. The second stage is RFP bidding stage. The Model RFQ document lays down the norms, principles, and parameters to be followed for the prequalification of bidders fairly and transparently manner with low transaction costs (Haldea, 2013). The contents of RFQ document aim to identify a) technical capacity and b) financial capacity for undertaking the project.

- a) **Technical Capacity:** Applicant should have enough experience and capacity in implementing infrastructure projects. Under the Technical Capacity Project experience and O&M experience.
- **Project/construction experience:** Project experience in the same or related

sector is the key component. More weightage should be given to project experience compared to construction experience because of the higher risk assumed under project experience. The experience is vital to be an eligible bidder.

- **O&M experience:** Many PPPs projects are of BOT variant is mainly determined based on the past relevant experience of the firm.
- b) **Financial Capacity:** While in India minimum net worth of applications should be 25% of the estimated capital cost of the project. For example, if the estimated capital cost of the project is Indian Rs. 5 billion, then the net worth of the bidder should be at least Rs 1.25 billion. The net worth criteria would ensure that prequalified applicants have sufficient financial strength to undertake the project (Pratap & Chakrabarti, 2017).

2) Request for Proposal (RFP)

RFP is a document generated by an organization with the view to eliciting bids from potential vendors who have the capabilities to develop a business component or a system that provides specific services for the organization (Moore, 2021). This is the second and generally the final stage of the PPP procurement process. Most of the technical proposals are evaluated first at the RFQ stage, on a pass-fail or shortlist basis, and only bidders who pass the technical evaluation proceed to financial evaluation at the RFP stage.

The GoI requires a two-stage bidding process comprising of RFQ and RFP stages in a typical infrastructure project procurement on a PPP basis. The RFP process is aimed at obtaining financial offers from the bidders pre-qualified at the RFQ stage. The RFP document should be simple and transparent and should require the bidder to quote only the value for a single bidding parameter. The detailed terms of the project would have to be specified in the Concession Agreement that should form an integral part of the Bid documents to be provided to the bidders along with the RFP document.

3) Concession Agreements

Governments, concessionaires, and scholars traditionally treat concession agreements as to private, bilateral contracts between high-ranking national officials and the concessionaire company (Miranda, 2007). Generally, two aspects of the creation process reveal this approach. At first, the government officials preclude broad, open deliberation at each stage of the creation of concession agreements: they remove initial debate over the agreements from the legislative procedure, negotiate the agreements directly with prospective concessionaires, and give the signed agreements the immediate force of law.

Second, the parties shield the agreements from the knowledge or influence, it provides the public with limited information about the concessionaire selection process and content of the concession agreements, and limited influence over the result.

The complex arrangements that comprise a PPP project are usually enshrined in agreements commonly known as concession agreements. The concession is a grant to a private sector entity permitting it to undertake actions for the provision of public good or service, which would save for such grant be provided by a public-sector entity. The concession agreement is, therefore, the agreement wherein the public-sector entity grants the private sector entity the right to implement an infrastructure project.

4.9.4 Model Concession Agreement (MCA) and Characteristics

MCA is a standardized international best practice and core of every PPPs project in India. The Cabinet Committee on Economic Affairs (CCEA) on 27 August 2014 empowered the Road Transport and Highways Ministry to amend Model Concession Agreement (Pruthi, 2021). This was done considering the need to standardize documents and processes for the PPPs framework ensuring uniformity, transparency, and quality in the development of large-scale infrastructure projects. All these requirements should be reflected in the concession agreement. Further, Purthi, 2021 Characterizes the MCA as follows:

- MCA is a legal contract that forms the basis of PPPs projects in India.
- It lays down the terms and conditions for executing a road project till a private firm operates.
- It states the policy and regulatory framework for the implementation of a PPP project.
- MCA addresses all the critical issues related to a PPP framework like mitigation and unbundling of risks; allocation of risks and returns; symmetry of obligations between the principal parties; precision and predictability of costs& obligations; reduction of transaction costs and termination.
- MCA assigns all the risks to the best suitable parties which can manage those risks.
- Currently, in various sectors like National Highways, State Highways, Urban Rail Transit System and Ports are available.

The following are a typical concession agreement would have provisions in five key areas.

- **Performance requirements**

The public sector is delegating some of its responsibilities to the private sector before creating a PPPs model. Therefore, the public sector needs to be certain that the quality of delegated services provided by the private party would be satisfactory and bankable.

In MCA process, the key performance indicators need to be stated in the Concession Agreement. From the indication of performance, firstly, the concession should relate to defining the quality and quantity of assets and services. After that it should be relate with monitoring and enforcement mechanisms, including incentives and penalties, like defining required maintenance standards for a road, or the required service quality for power and water services provided directly to users.

- **Payment mechanisms**

The private sector always seeks sustainable revenue streams with the required return in investment. There is a necessity to define how the private party will be paid, thorough user charges (road tolls), government payments based on usage, or availability charges paid by the public authority based on availability.

- **Adjustment mechanisms**

PPPs contracts are necessarily incomplete they cannot fully specify all future possibilities and how they should be resolved. Therefore, the PPPs contracts needs to built-in flexibility to deal with changing circumstances within the contract, rather than through renegotiation or termination.

- **Dispute resolution procedures**

PPP contracts are necessarily incomplete, defining an institutional mechanism for resolution of contractual disputes should be included in the CA (S & G, 2013). The Indian MCA model prescribes a dispute resolution procedure consisting of conciliation, arbitration, and adjudication. The relevant clauses state that if a dispute arises between the two parties, either party may call upon the Independent Engineer to mediate and help resolve the matter amicably. If that fails, the chairman of the Authority and the Chairman of the Board of directors of the Concessionaire may be the next stop for amicable settlement through Conciliation.

- **Termination provisions**

The concession agreement states the contract term, handover provisions, and circumstances of early termination of the PPP contract. Termination clauses are especially difficult to negotiate as reaching an agreement on the triggers and procedures for termination and on how to shape its consequences will take time can be contentious (Campbell & Reuer, 2001).

There are different types of clauses 1) when termination can be triggered, 2) the procedures for termination, and 3) the consequences of termination (who pays for what who owns any intellectual property developed during the exchange). In each clause, the government typically takes over control of the project assets after making a payment to the private party.

4.9.5 Contract Management

Contract management is the process of managing contracts that are made as a part of legal documentation of forging work relationships with customers, vendors, or even partners. Contract management is at the core of running the competitive enterprise. Only the financial close does not constitute success for a PPPs project. Success implies completion of construction sustained delivery at a satisfactory level of the contracted services. Thus, contract management is the process of managing, executing, and analyzing the management of contracts efficiently.

- **Type of PPPs in PPP Infrastructure projects**

There is a range of service delivery models that allocate responsibilities and risks between the public and private partners in various ways. While structuring the PPPs projects, the service delivery models play a vital role. The following table 4.21 describes key parameters that should be used to differentiate between various PPPs service delivery models.

Table 4.21: Parameters and Descriptions

Parameter	Description
Asset Ownership	Asset ownership refers to the party that owns the project or service assets. The economic importance of ownership stems from the owner's ability to exercise residual rights to control over the assets. The function of ownership is to allocate residual rights to control (Foss & Foss, 1999).
Designing Responsibility	This refers to the party which bears the designing responsibility and thus the associated risk and cost.
Construction Responsibility	The term construction responsibility refers to the party that involves the construction and associated risk and cost.
Financing Responsibility	This refers to the party which bears the financing of construction, and operation phase of the project and thus the associated risk and cost.
Operation & Maintenance Responsibility	This refers to the party which bears the Operations and Maintenance responsibility and thus the associated risk. This responsibility might be limited by the period of the agreement or might extend indefinitely.
Retention of User	This refers to the right of a party to collect and retain user charges

charges/Commercial Risk	as revenues.
Limitation by period	This refers to the period of the agreement. The agreement or the contractual relationship can be limited by a certain period or can extend indefinitely.

Source: Based on PPPinindia.com Toolkit compiled by the Author

Based on the above-described parameters table 4.21, the following range of service delivery models can be evolved. Table 4.22 shows the range of service delivery. Although the ranges of service delivery depend upon the formation of PPPs and the nature of SPV.

Table 4.22: Range of Service Delivery

Type of Service delivery Models	Service Contract	Management Contract	Lease	BOT	Divestiture
Asset ownership	Public	Public	Public	Public	Private
Designing Responsibility	Public	Public	Public (private in few Variants)	Public (Private in few Variants)	Private
Construction Responsibility	Public	Public	Private	Private	Private (Brownfield)
Operation & Maintenance Responsibility	Private (Partial)	Private	Private	Private	Private
Financing Responsibility	Public	Public	Private	Private	Private
Retention of User Charges/Commercial Risk	Public	Public	Private	Private (Public in few Variants)	Private
Limited by Period	Yes	Yes	Yes	Yes/No	No

Source Compiled by the Author

4.10 Summary

In the first section of this chapter, the author has discussed several policies before entering the PPPs. Several Institutional and Regulatory set up has been done by GoI at the Central level and the State level as well. FDI was one of the outside country funding policy and it has shown good results as well. After the 12th five years planning the GoI is shifting to a new Policy 'NITI Aayog' which is a new model for the Indian government. The rules and regulations of NITI Aayog are not in the public domain. While analyzing Indian PPPs it has shown interest after the 1990s economic liberalization. Several Policies were set up Kelkar Committee is one of them. On the Academic research side only, a few scholars are engaging on the Indian Topic. While PPPs practicing context, "yes" India is practicing a well-standard PPPs policy. It has numerous PPPs projects in the pipeline. Whilst the government side seems weak in organizational set-up, monitoring, database etc.

CHAPTER 5: CASE STUDIES

5.0 Chapter Introduction

The former chapter has critically evaluated the various PPPs policies in infrastructure promotion of India. It has traced the trends and patterns in the infra-PPP projects at global, national and this chapter presents the findings of the data collection phase of the thesis. Each case is introduced by a brief description of the case background and a graphic representation of the identified events. Further, identified critical events are presented along with the project phases: bidding, negotiation, build and operate phases. The following study present has so far observed that there has been a growing reliance on PPPs for infrastructure provision. The choice of case studies in this thesis provides a representation across different infrastructure sectors. It covers different PPPs project structures, including different stages of the PPPs cycle, and has projects with different levels of complexity. Roads and Airports cases are described below.

The case studies include the following:

- a. A description of the project with project features.
- b. The project structure was adopted with details of the roles and responsibilities of the both public and private sectors.
- c. The status and financial details.
- d. A description of the PPPs process adopted including project identification, project feasibility, structuring of the contract/concession, and awarding projects to private partners. This section includes details like the timing of major events like tendering and details like the level of response to the bid process.
- e. Risk allocation of key risks across the public and private sector partners, along with details of subsequent changes.
- f. A concise assessment of the achievement of objectives originally set out for the project, viz., improvements in service delivery e.g., capacity, quality, coverage affordability with indicative parameters, to the extent possible.
- g. An assessment of the achievement.
- h. A summary of the key learning and observations from the project.

5.1 Analyzing PPPs in Indian Roads and Highways

There is a necessity for a proper road network for the socio-economic development of India. GoI has also taken a giant policy towards the development of road networks (Chandra, 2015). Since 1947 of its independence, there has been a tremendous increase in the volume of road traffic, both

passenger and freight. The road network comprising of national and state highways has not matched the growth of traffic growth (Dole, 2012). The first road development plan of 1943-61, popularly known as Nagpur Plan, looked at the road needs of the country on a long-term basis and historically classified the whole Indian road system into a functional hierarchy comprising National Highways (NH), State Highways (SH), district roads, other district roads (Samanta, 2015). National Highways are an important segment of the road network due to their greater share of freight and passenger transport (Nallathiga, 2019). These days, the Indian road transport sector had received much attention for developing PPPs, with 47% of investment in all PPPs roads from 2002-2016 being highway projects (FICCI, 2014).

This section discusses the Indian government's decisive role in road sector development through PPPs. Later it discusses the case of Delhi and Jaipur road development under the PPPs model.

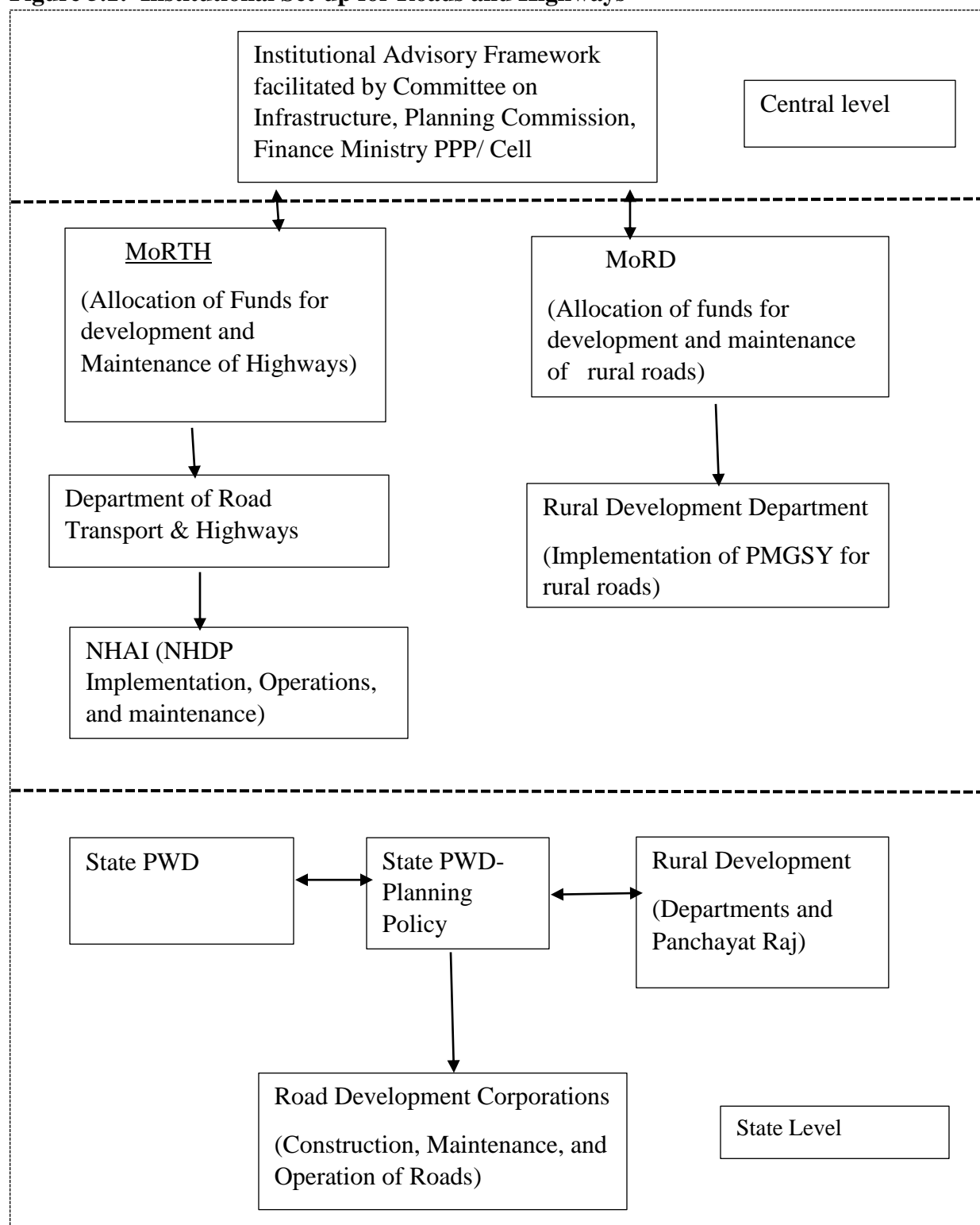
5.1.1 Scenario of Roads & Highways

The unprecedented growth in population, urbanization, the pressure of migration on civic services, and demands of the rural and agricultural sectors have necessitated an adequate and urgent investment in the roads and highways of India (Nautiyal, 2004). Roads and highway development in India are carried out by various institutions operating at various levels of GoI as well as other non-governmental institutions that play an important role. The conventional method of road development is done through departmental structures of state government that are giving way to new models such as special agency-led and private partnership-based. The World Bank PPI database lists 453 transport sector projects in India, a significant 22.5% of the total number of 2019 transport sector projects in the database. Inside the PPPs Road projects, 26 projects have got canceled, 10 have already been concluded, 91 under the construction, and a whopping 321 are in the operational phase. At 6% cancellations in India, it approximately the same as the global average of 5.5% cancellations of the transport sector (Garg & Garg, 2017).

5.1.1.1 Institutional Framework for Roads and Highways

After the 1990s, Highway development in India has been accorded high priority. The programmatic approach to highway development through NHDP paid dividends in terms of accelerated road development. The broad institutional framework covering major institutions and characteristics are discussed in figure 5.1 and table 5.1. Till the date the institutional setup is divided in Central level and State level. The central level in large unit it monitors the state level activities and make easy in formation of rules and regulations.

Figure 5.1: Institutional Set-up for Roads and Highways



Source: Compiled by the Author.

Table 5.1: Characteristics of Several Institutions

Development Institutions	Financial Institutions
<ul style="list-style-type: none">• NHAI (National Highways Authority of India)• MoSRTTH (Ministry of Surface Road Transportation & Highways, GoI)• State Highways & Transportation Departments• Special Agencies- Road Development Corporations• Private Developers & Contractors• Infrastructure Development firms• Material and Equipment Suppliers• Constructing and Contracting Firms	<ul style="list-style-type: none">• Central Road Fund• Central and State Government (budgets)• Banks and Financial Institutions• Specialized Institutions-IDFC, IIFCL, LIC• General Public/Investors• Private Debt Financiers• Insurance and allied service firms• Infrastructure Debt Fund

Source: Compiled by the Author.

- **National Highways Authority of India (NHAI):**

Highways are an important segment of the road network due to their greater share of passenger and freight transport. The growth of the highway network in India was steady and remained low for a long time but it picked up the momentum recently. The impetus to highway development came after the establishment of NHAI as a nodal agency in 1997, but the major development came after a policy shift in 2001 (Nallathiga & Shah, 2014). The NHAI is an autonomous agency of the GoI, responsible for the management of a network of over 60,000 Km of National highways in India. The NHAI is a statutory body that was set up through an Act of Parliament in 1988 and is responsible for the development, maintenance, and management of the National Highways (NH) entrusted to it and for matters related or incidental thereto. The NHAI became operational in February 1995. The NHDP is the largest highway project ever undertaken by India. NHDP phase I & II envisage 4/6 lining of about 14,279 Km of National Highways at a total estimated cost of Rs.650 million. These two phases comprise Golden Quadrilateral (GQ), North-South and East-West Corridors, Port Connectivity, and other projects. The GQ 5,846km connects the four major cities of Delhi, Mumbai Chennai, and Kolkata. The phase III to phase VII is taken up based on PPP on BOT mode (Rekhi, 2021).

- **National Highways Development Programme (NHDP):**

The largest highway project ever undertaken in India is implemented by the NHAI which was constituted under the NHAI Act, 1988, and was made operational in February 1995. Initially, it was entrusted with the task of implementing five externally aided National Highways

improvement projects. Subsequently, it was asked to implement several other projects including some BOT projects on National Highways. The GoI established NHAI as an autonomous body with The following sub-sections analyses the findings for the National Highway Development Project Description: A seven-phase development program largely, though not exclusively, involving private participation in the development, maintenance, and operation of national highways. The first two phases of the program are near completion. The subsequent phase envisages six lanes of 6,500 kilometers, four lanes of 17,500 kilometers, upgrading of about 20,000 national highways, and initiation of work on 1,000 kilometers of expressways.

The Indian highways sector has evolved over the past decade, especially in the national highway segment, and is reaching the stage of maturity. So far, NHAI has awarded PPP projects under BOT-toll and BOT-annuity.

- **National Highways & Infrastructure Development Corporation Ltd. (NHIDCL)**

NHIDCL is responsible for the construction/upgrading/widening of NH in parts of the country that share international boundaries with neighboring countries to promote regional connectivity on a sustainable basis.

- **Public Works Department (PWD):**

The subject of public works in India is so vast (Sykes, 1858). These days PWD is supposed to manage national highways, state highways, major district roads, and related roads. In India, most major states have PWDs except for Andhra Pradesh and Gujarat which have roads & building departments, and Tamil Nadu which has a highway department. PWDs are divided into zones, with each zone headed by a chief engineer. All zones together are headed by the Engineer-in-chief Secretary to state government as the overall head of the department.

- **State Highways:**

State Highways link various parts of the states and are undertaken by state governments with the technical and financial assistance of international lending agencies e.g., World Bank, Asian Development Bank, and Japan Bank for International Cooperation. States like Tamil Nadu, Maharashtra, Andhra Pradesh, Kerala, and Orissa have been at the forefront of it. Similarly, several states have established state road development corporations and entrusted the responsibility.

- **Rural and Urban roads**

GoI has accorded priority to road connectivity to the rural areas through Prime Minister Grameen Sadak Yojana (PMGSY). The primary objective of the PMGSY is to provide connectivity by way of an all-weather road to the eligible unconnected habitations in the rural areas with a population of 500 persons and above in plain areas. In respect of special category states like Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, Tripura, Himachal Pradesh,

Jammu& Kashmir, and Uttarakhand, the tribal and backward areas are identified by the Ministry of Home affairs and planning Commission (PMGSY, 2015). This scheme is floated to provide road connectivity to rural areas with direct funding by the central government to local panchayats (Nallathiga, 2019).

5.1.1.2 Political Process

The political process analysis requires the identification of key players in the central government. While the stakeholders for PPP programs include the government, project companies, lenders, and users, this analysis is confined to the government. The reason for narrowing the range of stakeholders to the government only is that the analysis focuses on the policy formulation process of GoI. Thus, the key players are analyzed below: National Highways are an important part of India's road network, as a result, the expansion and up-gradation of National Highways have been getting the attention of the central government (Devkar & Laishram, 2015). There are no doubts over the need for improving NHs. However, there is a need for a suitable process of selecting an appropriate procurement model for the creation and up-gradation of National Highways. During the early years of formation, the NHAI has primarily procured and delivered the infrastructure with public funds or loans from multilateral funding agencies. In highway PPPs, the private sector consortium plans design, builds finance, and operates the highways for government to purchase (Availability Payment) or user-pay (Toll). These days Highway PPPs are gaining wide acceptance worldwide, with significant success in time and cost savings compared to traditional methods (Jenkinson, 2003).

▪ Planning Commission (PC)

Organizational mandates and responsibilities

- The Planning Commission was established in 1950 under the Jawaharlal Nehru cabinet (Roberts, 2020). The PC has a rather unique status within the central government. It is not a statutory body as in the case of other ministries/agencies but was established by a Cabinet Decision as a body to formulate (Tsukada, 2013).
- This rather unique, but less secured status of the PC, tends to drive it to constantly re-invent itself as a lead agency for various policy initiatives including PPPs.
- From 2015 under the governance of Prime Minister Narendra Modi had the announcement to replace the PC in NITI Aayog.

▪ National Highway Authority of India

Organizational mandates and responsibilities

- NHAI is an implementing agency. The views of NHAI's cannot be directly reflected in GoI policy deliberations, it works under the ministry of MoRTH.

- NHAI was accorded managerial autonomy under the NHAI Act. The establishment of the NHAI Board as an empowered committee enabled NHAI to decide without going through individual consultations with relevant ministries.

Key Personnel

- The first second chairman is appointed by earlier ministries for five three years respectively. Their successors were appointed by the MoRTH Minister.

5.1.1.3 Financing on Roads and Highways

Owing to constraints of public funding, PPPs have come to play a major role in the development of national highways. The National Highways Act, 1956 was amended in 1995 to enable private investment in the development, maintenance, and operation of highways. The GoI has initiated several other measures in this direction such as the declaration of the road sector as an industry to facilitate borrowing on easy terms and reduction in the customs duties on construction equipment.

The highway projects in India accelerated only after 1990 and have been progressing up till today. There is an ongoing public policy debate in India on how to fund the necessary new investment as well as operations and maintenance on the growing national and state highway network. These days GoI and many state governments are interested in Highway and road development are capital-intensive infrastructure that requires a huge amount of capital. In the initial phases of highway development, much of the funding came in the form of a GoI grant and the central Road, which was insufficient capital. The private sector participation was merely 5% during the 10th five-year plan, which is envisaged to increase to 34% during the 11th five-year plan. Also, the investment in the road and highways is around 15-16. The US \$ 146 billion during the 11th five-year plan. A 40% private sector involvement will mean the whopping US \$58 billion investment in the roads and highway sector under PPPs.

• Private sector Participation in Highways and Roads development

Before the 1990s economic liberalization roads, and highways were completely built by the government departments (Central and States) using their funds for several decades. The GoI and state government budgets were not sufficient for the overall development of roads and highways. Thus, the opening of the roads and highways sector began with highway development upon the establishment of NHAI.

• Incentives for Private Sector

Several incentives have been given by GoI. Some of the incentives are described as follows:

- Declaration of the road as an industry and allowing 100% FDI.

- Government to carry out all preparatory work including land acquisition and utility removal.
- NHAI/GoI to provide a capital grant up to 40% of the project cost to enhance viability on a case-to-case basis.
- 100% tax exemption for 5 years and 30% relief for the next 5 years, which may be availed of in 20 years.
- Higher Concession period allowed to 30 years.
- Arbitration and Conciliation Act 1996 based on UNICTRAL provisions.
- In BOT projects entrepreneur can collect and retain tolls
- Duty-free import of specified modern high capacity equipment for highway construction

- **World Bank Assistance:**

The International Bank for construction and Development (IBRD) and its affiliate the International Development Association (IDA), jointly referred to as World Bank, extend economic assistance to India in the form of loan and development credits respectively. As a recent project on December 22, 2020, the GoI and the World Bank has signed a \$500 million projects to build safe and green national highway corridors in the states of Rajasthan, Himanchal Pradesh, Uttar Pradesh, and Andhra Pradesh as Green National Highways Corridors Project (World Bank, 2020).

- **Private sector Financing**

Several initiatives are been taken by the government to encourage private participation in financing the various road projects. The involvement of these private sector companies in the road or highway project is been governed by some abide rules and regulation in form of the contract document. Depending upon the type of project and the contract type, the various methods, or the forms of financing tools available for the private companies in the highway sector are shown in table 5.2.

Table 5.2: Public and Private Sectors Investment in Road Sector

Objectives	10th year Plan	11th year Plan	12th Year Plan
Road and Bridge Investment (US\$ Billion)	32.2	69.8	145.8
Public	30.6 (95%)	45.1 (66%)	87.5 (60%)
Private	1.6 (5%)	23.7 (34%)	58.3 (40%)
Total investment in infrastructure (US\$ Billion)	193.7	456.9	810.9
Roads and Bridge investment as total % of infrastructure investment	16.6	15.3	16

Source: (Dawda, 2015)

5.2 Roads and Highways Development Phases

On the research topic of the PPPs for NHDP, particularly important are studies prepared by the GoI and the Asian Development Bank. Similarly, consulting firms published several reports, all of which discussed the policy and institutional framework of the PPPs. Road and Highway development in India was initially carried out by different institutions operating at various levels of Government. The National Highways Authority of India was constituted by an act of Parliament, Viz. the National Highways Authority of India, Act 1988. It is entrusted with the responsibility of implementing a greatly expanded National Highways Development Project (NHDP) spread over seven phases with an estimated expenditure of Indian Rs. 4,71,975 Crores and envisages the improvement of more than about 54,500 Km of arterial routes of the National Highways network to international standards.

The Motto of the National Highways Development Project are as follows:

- NHDP's prime focus is on developing International standard roads with facilities for uninterrupted flow to traffic
- Enhanced safety features
- Better riding surface
- Better road geometry
- Better Traffic Management and Noticeable Signage
- Divided Carriageways and service roads
- Grade Separators

- Over Bridges and Underpasses
 - Bypasses
 - Wayside Amenities
- (Lok Sabha Secretariat, 2013a)

In the initial stages of the highway development, the NHAI used the traditional procurement model of Engineering, Procurement and Construction (EPC) contracts, which involved highway developers having the limited role of project execution only. Subsequently, it began to involve the private sector players through awarding of long-term concession contracts involving BOT variants for various stretches of national highways. NHAI has given more independence to select and implement projects to aid speedy development by seeking private sector participation. From 1998 onwards, the GoI has been implementing the NHDP. The development phases of NHDP are shown in table 5.3. and the past and current highway construction is shown in figure 5.2.

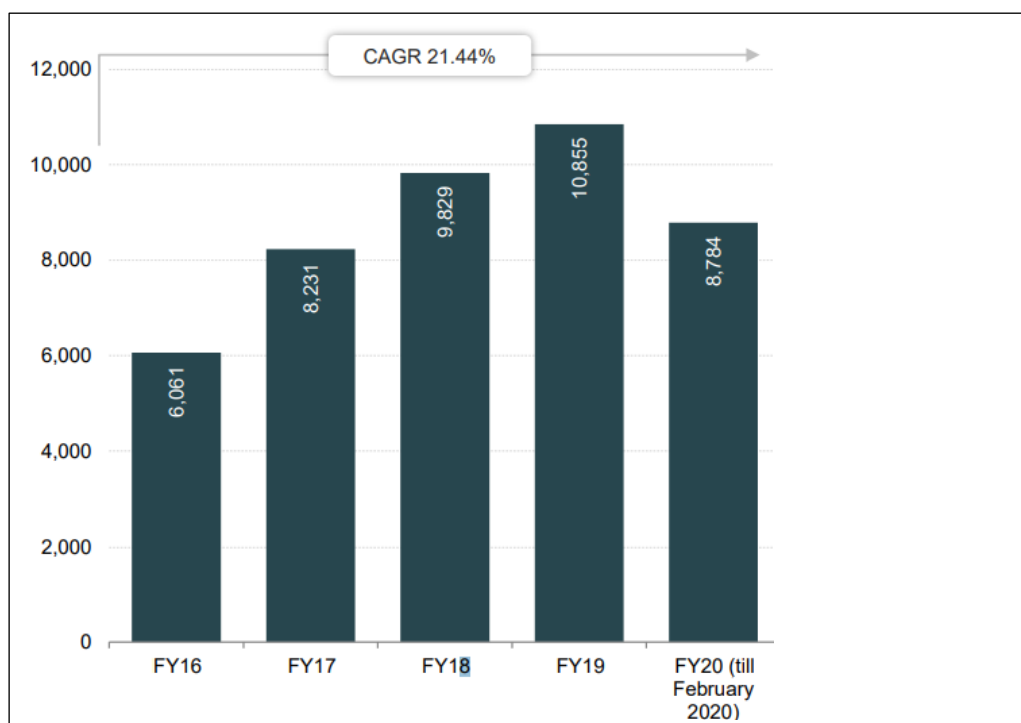
Table 5.3: The NHAI Development Phases

NHDP Development Phase	Development Focus	Development Model	Length	Costs
Phase I	Golden Quadrilateral and Port connectivity projects	Traditional EPC Model	14,279 Km	NA
Phase II	North-South and East-West connectivity	Traditional EPC Model	NA	NA
Phase III	Conversion of the highways from 2 to 4/6 lanes while providing connectivity to uncovered places	PPP through BOT Model	121,109Km	\$18.5 billion
Phase IV	Upgradation of about NH into 2-lane with paved shoulders	PPP through BOT Model	20,000 Km	\$5.6 billion
Phase V	6-lanning or lining of 6500km of existing 4-lanes NH	PPP through DBFO Model	6,500 Km	\$9.3 billion
Phase VI	Development of fully accessed	PPP through DBFO Model	1,000Km	\$3.8 billion

	controlled expressways			
Phase VII	Development of ring roads, grade-separated intersections, flyovers, underpass, and service roads	PPP through DBFO Model	700Km	\$4.2 billion

Source: Lok Sabha Secretariat (2013b)

Figure 5.2: Highway Construction in India (Km) Till February 2020



Source: IBEF (2020)

Figure 5.2 shows that Highway Construction in India increased at 21.44% CAGR between FY 16-FY 19. In FY 19, 10,855km of highways were constructed. GoI aims to construct 65,000 Km of National Highways for 5.35 Lakh crore (Indian unit) (US\$ 741.51 billion) by 2022.

In April 2020, GoI has set a target of constructing roads worth Rs. 15 Lakh Crore (US\$212.80 billion) over the next two years.

In October 2020, the foundation stone was established for nine National Highway projects- with a total length of 262 Km-worth Rs. 2752 crore (US\$ 371.13 million) in Tripura.

In October 2020, The Minister of Defense, Mr. Rajnath Singh, dedicated the 19.85 Km alternate alignment of the National Highway 310 in East Sikkim for defense preparedness and socioeconomic development in the state.

In October 2020, National Highway Projects worth Rs. 19,800 crores (US\$2.67 billion) in Kerala have been initiated by the Ministry of Road Transport and Highways and are expected to be completed by 2024. 30 projects-with a length of 549 km -worth Rs. 5327 crores (US\$ 718.40 million) are under implementation. In October 2020, the Department of Central National Highways has issued a permit to construct a 122 km National Highway from Kalvakurthi in Telangana to Karivena in Andhra Pradesh. The new national highway would reduce the distance to Tirupati from Hyderabad by 80km. The investment scenario from 2014 to 2020 is shown in table 5.4, and is briefly discussed the characteristics and related these evidences in figure 5.3 road infrastructure by 2021.

Table 5.4: Investment Scenario in the Road Sector (in Rs thousand crore)

Year-wise	Budgetary Support	Borrowings	Private Sector Investment
2014-15	29	19	3
2015-16	46	30	23
2016-17	49	16	33
2017-18	60	17	51
2018-19	76	22	61
2019-20	43	12	26

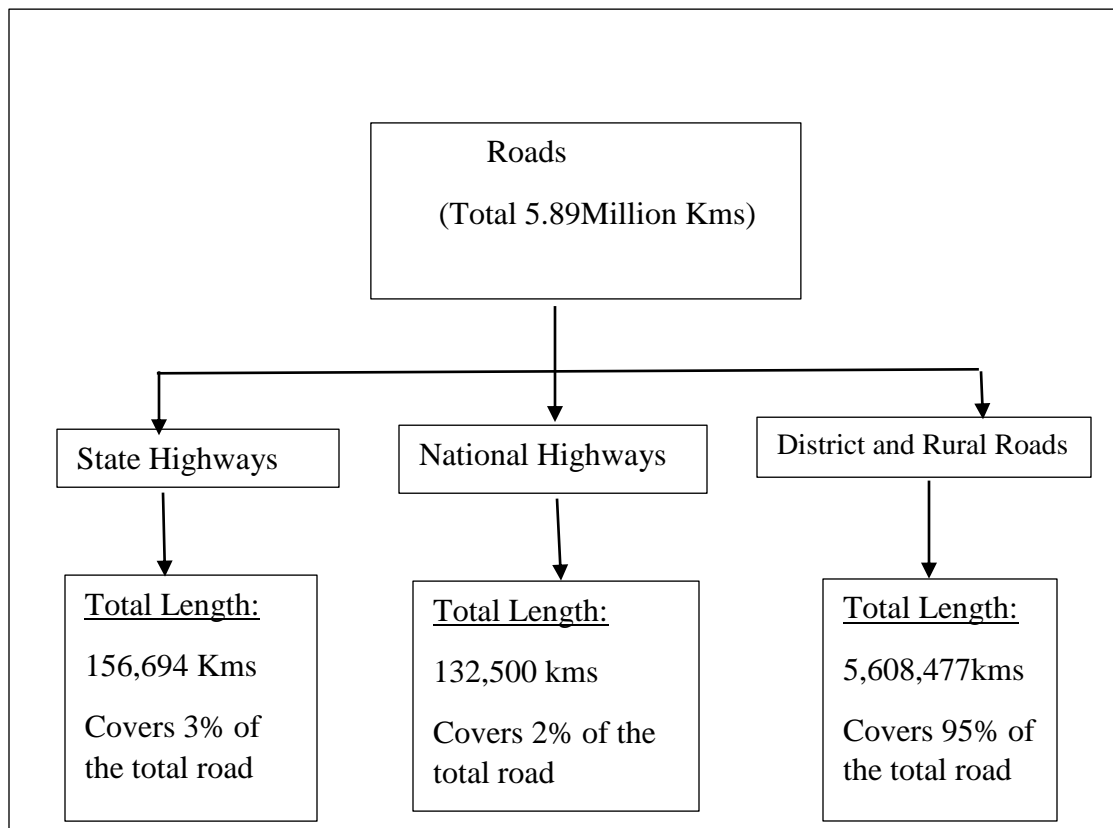
Source: PRS Legislative Research, (2020)

- Role of the central government in financing:** The Ministry of Road Transport and Highways does not have its source of revenue other than budgetary support from the central government. It recommends the RBI and Ministry of Finance to generate funds for the development of the road sector. Only the central government allocates a huge budget for the road sector, which will not be sustainable over the long term. Thus, the central government suggests establishing financial institutions and models to encourage the return of private investment to the road sector. The Standing Committee on Transport 2018 noted that road development needs concerted efforts in the form of mobilization of funds from other sources along with increasing budgetary allocation as private sector involvement has been depleting in recent years (Rajya Sabha, 2018).
- Borrowings:** In 2020-21 NHA estimates to borrow Rs 65,000 crore towards capital outlay. This amount is 13% lower than the revised estimates for borrowings Rs 75,000 crore. In 2018-19, about 68% of the funding for capital outlay towards roads and highways was

estimated to come from borrowings, and the remaining from budgetary support. However, as per the actual figures, 63% of the funding came from borrowings. In 2017-18 also, the actual capital outlay funding from borrowings was marginally lower than estimated. In 2018-19, the budgetary support was 21% higher than the budget estimates for that year. It could imply that NHAI has been unable to raise the required level of borrowing, and the central government should step to bridge the funding gap.

- **Private financing contracts:** private financing for the roads sector is a challenge. Several PPPs road projects have not been able to attract bids. The major highway developers are also facing financial capacity constraints. Further, there is a lack of debt products that are aligned with the revenue stream profile of highway projects. This makes financing of such projects a difficult situation and has resulted in some projects getting stalled at the construction age. The committee on Revisiting & Revitalizing the PPP model of Infrastructure Development by Vijay Kelkar committee had looked at issues with PPP projects.

Figure 5.3: Road Infrastructure by 2021



Source: Compiled by the Author

Road infrastructure in India is studied under three headings: State Highways, National Highways, and district and rural roads (Sharma, 2015). With about 5.2 million km of the road network, India has the second-largest road network in the world. Broadly speaking, Indian roads are comprised of National Highways, State Highways, and other roads. As of 2019-2020, the NH covers more than 1,32,500 Km and carried more than 40% of the national road traffic. It has launched a major road development project in the form of the National Highways Development Project (NHDP) connecting the four metros (Delhi-Mumbai-Chennai-Kolkata) Called the Golden Quadrilateral Project (NHDP Phase I) connecting the North-South and East-West extremities of the country (NHDP II) and other phases. The objective of the NHDP is capacity up-gradation and the requirement that these highways meet minimum standards.

The related offices under the Ministry of Road Transport and Highways are as follows:

1) Special Accelerated Road Development (SARD)

On the initiatives of the Prime Minister, the Ministry of Road Transport and Highways has taken up an ambitious Special Accelerated Road Development Programme for the development of road network in the northeastern region comprising of the eight states Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Tripura, and Sikkim. On 13, October 2004, GoI proposed the SARD programme and outlined the implementation modalities. The objective of this programme was to link the state capitals and district headquarters of the states. This programme envisages providing road connectivity to all the district headquarters in the north region by minimum 2 lane highway standards apart from providing road connectivity to backward and remote areas (PWD, 2021).

2) Pradhan Mantri Sadak Yojana (PMGSY)

On August 15, 2000, Prime Minister Atal Bihari Vajpayee (1998-2004) announced the Pradhan Mantri Gram Sadak Yojana to connect, within the next three years, every village that has a population of more than 1000 through good all-weather roads and every village of more than 500 persons similarly connected by the year 2007 (Pradhan Mantri Gram Sadak Yojana, 2001).

• Facilitation of the Land Acquisition for NH Development

Insufficient land has emerged as the single biggest constraint to speedy implementation and consequent cost escalation of infrastructure projects in India. Until these days the greatest bottleneck for the delivery of infrastructure projects is land acquisition. The problem is widespread across infrastructure sectors and includes many road PPP projects for example Delhi-Jaipur Highway and power projects like Tailaiya. While dealing with this issue, the National Highway Act of 1958 was amended to make it clear that as far as a national highway.

5.3 Applied PPPs Models in Roads and Highways

The most distinct part of India's physical infrastructure development in recent years is the development of road networks across the country; per sq. km of surface area in India is now endowed with one Km of roadways (De, 2008). India has the 2nd largest road network in the world with over 5.89 million Km at present. It consists of National Highways, Expressways, State Highways, Major District Roads, Other District Roads, and Village roads. Targeting the up gradation of the road infrastructure, the country has one of the largest PPP programs that has been applying on for three decades (Garg & Dayal, 2020). National highways played a key role in the economic development of India by connecting states, capitals, ports.

Table 5.5: PPP Models for Indian Roads and Highways

EPC	BOT/BOOT	Annuity	Contracts
<ul style="list-style-type: none"> • First Model that induced private sector strengths • Suitable for Greenfield Projects • Getting revived again 	<ul style="list-style-type: none"> • Concession models are very popular, and variants also emerged • Suitable for both greenfield and brownfield projects 	<ul style="list-style-type: none"> • A new addition to the current development models • Suitable for operation and maintenance projects 	<ul style="list-style-type: none"> • Conventional development model followed by government • Suitable for highway junctions, intersections, and furniture

Source: Compiled by the Author

The PPPs framework was prepared as early as 1997, the impetus to its adoption came after 2001. The inherent contractual structure advantage of the concession model within the PPPs has made the Government adopt the policy to develop roads/highways in phase third of NHDP exclusively on the BOT basis. Much of the private sector participation in road development has been coming in India under the BOT model with the variants of:

- ✧ Engineering, Procurement, and Construction (EPC) model
- ✧ BOT-Toll model
- ✧ BOT-Annuity model
- ✧ BOT-Toll/Annuity hybrid model

BOT (Toll) Model: In the BOT (Toll) model, the concessionaire recovers the investment by charging toll from the users of the road facility. This model reduces the fiscal burden on the government and allocating the traffic risk to the concessionaire. This is the model used for most of the projects and can be regarded as the default model for highway projects.

BOT (Annuity): Under a BOT annuity model, the Concessionaire has assured of a minimum return on his investment in the form of annuity payments. The Concessionaire does not bear the traffic risk and the Government bears the entire risk concerning toll income. Table 5.6 shows the existed risks in road infrastructure development.

Table 5.6: Indicative Allocation of Risks in Indian Roads

Type of Risk	Government	Private Sector
Political Risks		
Expropriation of the Company	✓	
General modifications of the law and tax system		✓
Specific modifications of the laws and tax system	✓	
Political events	✓	
Termination of the contract by the government	✓	
Limitation of Currency Convertibility	✓	
Materially adverse foreign action	✓	
Construction Risks		
Land acquisition	✓	
Cost overrun (excluding change of project)		✓
Cost overrun (Change of project)	✓	
Increase in Financial Costs		✓
Risk on schedule and quality of works	✓	✓
Risk on the administrative procedures delay time	✓	✓
Damages incurred by the works		✓
Bankrupt of the private company	✓	
Operational Risks		
Impact on the environment		✓
Force Majeure	✓	✓
Technology risk		✓
Cost overrun		✓
Change in specifications	✓	
Commercial Risks		
Traffic shortfall	✓	✓
Price control policy	✓	
Other overruns		✓
Construction of competing facilities	✓	✓
Financial Risks		
Inflation	✓	✓
Interest rate	✓	✓

Exchange rate		✓
Legal Risks		
Permits and licenses	✓	✓
litigation	✓	✓

Source: PIARC (2021).

Having the risks in PPPs in road sectors the GoI has promoted government measure in the promotion of state highways and roads. The table 5.7 shows the GoI measure for PPPs investment in Indian roads.

Table 5.7: GoI Measures for Promotion for PPPs Investment in Roads

<ul style="list-style-type: none"> ❖ The road sector was declared as an industry to facilitate borrowings on easy terms and to permit the floating of bonds. ❖ MRTP provisions are imposed on the entry of large firms into the highway sector. ❖ The National Highway act was amended to enable a levy of a fee on national highways, bridges, and tunnels. ❖ Private sector participation including foreign investment sought in the development of stretches of national highways and the construction of expressways on a BOT basis for 30 years. ❖ For the smooth flow of traffic, sales tax and to octroi barriers not to be established in the expressways and the normal checks by the authorities to be conducted at the entry and exit points only. ❖ Land acquisition and removal of utilities to be done by the government. ❖ Foreign direct investment up to 100 percent (with total foreign equity up to Rs. 1500 crore) allowed. ❖ Government/NHAI authorized to provide a capital grant up to 40 percent of the project cost to make the project viable. ❖ Five-years corporate tax holiday and deduction of 30 percent on profits for tax in the next five years, to be availed of in 20 years of commissioning of the project. ❖ External Commercial borrowing up to 35 percent of the project cost permitted. ❖ Import duties on identified modern high capacity road construction equipment removed. ❖ Specialized equipment can be imported free of customs duty. ❖ Government to permit activities like development of housing as an integral part of Bot road projects within a maximum period of three years and to be treated as investment in infrastructure for Tax benefits. ❖ Model concession agreements for different types of NHDP have been developed to assist a hassle-free take-off of the projects.
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Source: PWC (2021)

After the establishment of PPPs promotion rules and regulations the Institutional framework for PPPs in Planning, governance and operatin fields are implemented. Table 5.8 shows the current Institutional framework for road development and the criteria.

Table 5.8: Current Institutional Framework

Agency	Planning and Design	Governance	Operation and Management
Ministry of Road Transport and Highways	Planning, development, and maintenance of National Highways inside India. It extends technical and financial support to State Governments for the development of roads.	Formulation and Implementation of policies for Road Transport, National Highways, and Transport Research to increase the mobility and efficiency of the road transport system in the country.	Evolves road safety standards in the form of a National Policy on Road Safety and by preparing and implementing the Annual Road Safety Plan, Collects, compiles, and analyses road accident statistics, and takes steps for developing a road safety culture in India.
National Highways Authority of India	National Highways, Flyover, Bridges	National Highways, Flyover, Bridges	
Jaipur Development Authority (state)	Preparation and implementation of the master plan including transport system, development of ring roads transport facilities like MRTS, etc., street lighting	Widening of all main roads, construction of over bridges, under bridges, under bridges and flyovers, regulation of traffic on roads, removal of encroachments in non JMC but JDA areas.	Traffic control and management, minimize pollution, environmental development by planning and implementing roadside plantation.
Jaipur Municipal Corporation (state)	Urban Planning including town planning, regulation of land use, and Urban amenities like bus stops.	Solid waste handling, streetlights, removal of encroachments in JMC areas	Land use, Maintenance of roads, parking, road lights
Rajasthan Urban Infrastructure Development Project (State)	Strengthening of the roads, construction Flyovers, drainage.	Linking investments to ongoing reforms integrated quality infrastructural facilities	Integrated urban infrastructural facilities.
Public Works Department (state)	Design and Construction of Roads and Bridges	Acts as Technical Advisor to the state government in these matters, evacuating the	Permitting construction of approaches on both sides of roads to a private individual, other institutions factories,

		encroachments coming along the roadsides.	Petrol Pumps, etc., plantation of trees along both sides of the road
Transport Department (state)	Policy for traffic control, Vehicle registration, setting standards including safety and environment.	Traffic management systems, Fixation of Fares Vehicle registration, driving License, Special Permit.	Road Transport, Inspection, and Testing of vehicles, Enforcement of rules.
Traffic Police	Policy for traffic control, Vehicle registration, setting standards including safety and environment	Traffic Enforcements for safe and smooth traffic	Road accidents investigation, enforcement of Traffic Rules
Rajasthan State Road Development Corporation Ltd. (state)	Construction of Roads, Bridges	Construction of privately financed infrastructure projects, mainly Highways, Bridges being constructed on the BOT Model.	Augment the limited number of specialized & quality construction agencies available in the state & country to reduce the cost and time overruns in the construction of Bridges Roads.

Source: (Sharma & Sharma, 2017)

5.4 Case of Delhi-Jaipur Highway

Jaipur is situated 260 Km southwest of New Delhi on a sandy triangular dried of lake (Singh A. K., 2019). It is the capital city of Rajasthan and ranks eleventh largest in India. The city has maintained its glory and charm for ages and is well-known even today throughout the world as Pink City (Singh & Prakash, 2020). Jaipur also has locational advantages as it lies approximately 250 km away from New Delhi and Agra and forms the ‘Golden Triangle’ tourist circuit (Choubey & Bansal, 2020). The Concession Agreement (CA) for the Delhi-Jaipur highway was signed between NHAI and Pink city Expressway Private Limited (PCEL) on June 6, 2008 (PCEPL, 2013). The CA is for the construction, operation, and maintenance of the project for a concession period of 12 years. The total project cost was estimated at Rs. 1896 crore. The project is for six laning (from existing four lanes) of Gurgaon-Kotputli-Jaipur section of National Highway-8 (NH-8) from Km 42.70 to Km 268.00 (length: 225.30km) in the states of Haryana (64km) and Rajasthan (161km) under NHDP phase V as Build-Operate-Transfer (Toll) on Design-Build-Finance-Operate pattern. The road passes through the important towns of Manesar (48 km), Dharuhera (68km), and Bawal (96km) it touches all the important industrial hubs in the state of Haryana, and through Behror (132km), Kotputli (155 km), Paota (175 km), Shahpura (200km) and Manoharpura

(211.5km) in Rajasthan. Toll plazas exist at three locations: Bilaspur (61 km) Manoharpur (211km) and Daulatpur (241Km). The entire project construction work has been divided into Engineering, Procurement, and Construction (EPC) packages. Table 5.9 and figure 5.4 shows the total length and the whole figure of NH-8 Delhi Mumbai highway which is going to constructed under the PPP Model.

Table 5.9: NH-8 Delhi Mumbai National Highway

Delhi-Mumbai National Highway				
National Highway No.	Rajasthan National Highway Route	State thorough which passing	Length passing through State (Km)	The Total length of NH (Km)
NH-8	Delhi-Jaipur-Ajmer-Udaipur-Ahmedabad-Vadodara-Mumbai	Delhi	13	1375
		Haryana	101	
		Rajasthan	635	
		Gujarat	498	
		Maharashtra	128	

Source: Rajasthan National Highway (2021)

Figure 5.4: Delhi-Mumbai Route NH-8



Source: Maps of India (2021)

National Highway No.8 Route: Delhi to Mumbai

Delhi-- > Gurgaon-- > Kukrola-- > Dharuhera-- > Bawal-- > Kotputli-- > Paota-- > Shahpura-- > Achrol-- > Jaipur -- > Phagi-- > Dudu-- > Kishangarh-- > Ajmer-- > Mangliawas-- > Beawar-- > Bali-- > Bhim-- > Devgarh-- > Kelwa-- > Rajsamand-- > Nathdwara-- > Delwara-- > Udaipur-- > Barapal-- > Paduna-- > Kanuwara-- > Sanjaria-- > Shamalajji-- > Himatnagar-- > Prantij-- > Gandhinagar-- > Naroda-- > Ahmadabad-- > Kheda-- > Nadiad-- > Valsad-- > Vadodara-- > Por-- > Karjan-- > Bharuch-- > Ankleshwar-- > Kim-- > Khadana -- > Palsana-- > Khaliawada-- > Chikhil -- > Valsad -- > Pardi- > Vapi-- > Talsari-- > Kasa -- > Khurd -- > Manor-- > Mandai-- > Rajavalli-- > Bandra-- > Mumbai/Bombay

Figure 5.5: Location Map Delhi -Jaipur Highway



Source: (Jha, 2017)

Figure 5.5 shows the Delhi Jaipur section of 195 Km which is going to be constructed under PPPs model. The characters of Delhi Jaipur PPPs models are discussed below:

- **Magnitude of Operation**

The project road passes through 2 states, namely Haryana and Rajasthan. The section in Haryana starts at Km 42.7 and ends at Km 107.18 and the section of Rajasthan starts at Km. 107.18 and ends at Km 273.00 The total length of the project road is Km 225.600. The project road passes through the districts of Gurgaon and Rewari in Haryana and Alwar and Jaipur district in Rajasthan. The total stretch of the proposed Project is 195.10 Kms. The proposed Greenfield expressway will start at Km 40.10 of NH-8 near the kherki Dhaula Toll Plaza and, it will terminate at Km 217.0 of NH-8 near Chandwaji.

The key feature of the project

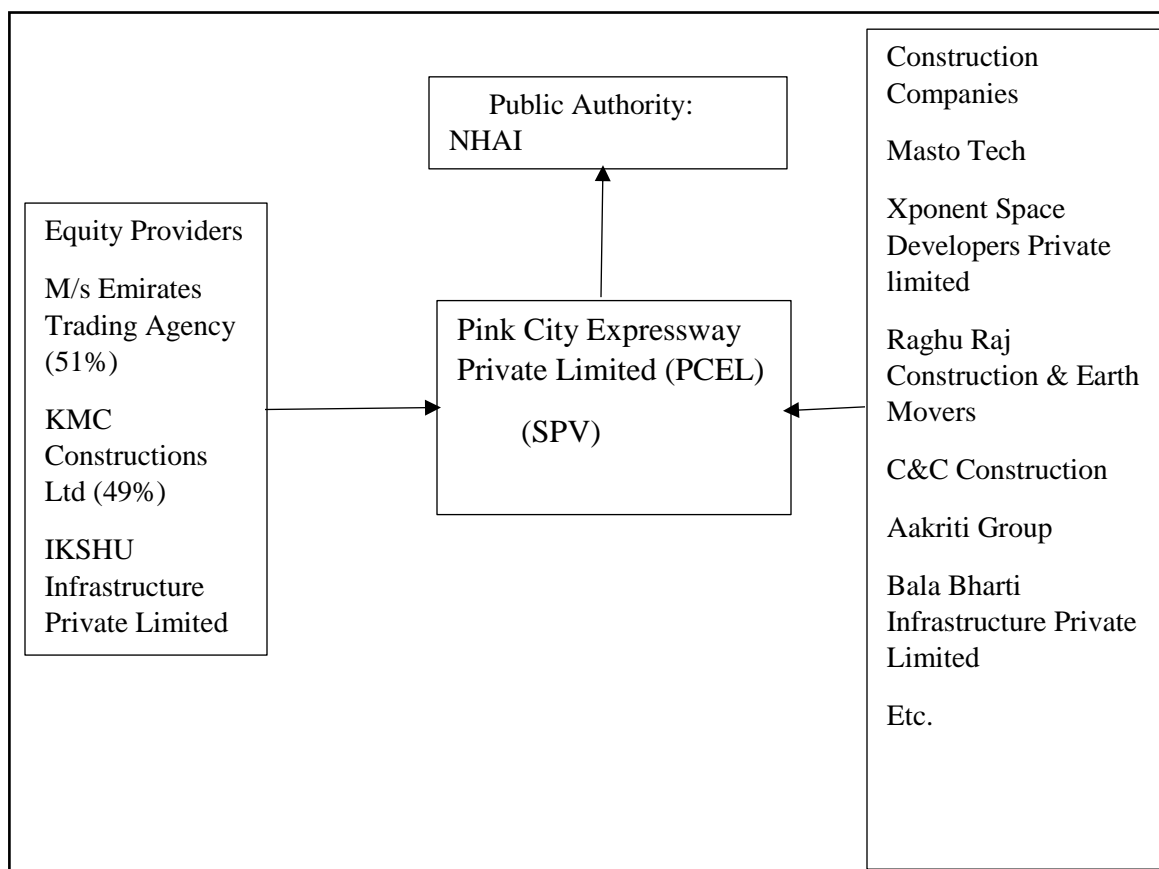
Land: The project needs 2,800 hectares of land.

Cost: The cost of the land acquisition will be Rs 18,000 crore and the expressway will start from the south Delhi international Airport.

Time: The expressway will help in reducing the distance between the national capital and Pink City. The travel time between Delhi and Jaipur will be reduced to about 3 hours from about 8 hours.

Completion: The highway project was to be ready in 2011 but it faced several hurdles and issues with land acquisition, environmental clearance, shifting of utility services, litigation, banking which led to unexpected delays. The project is going to finish with only 7 out of the total 57 structures (flyovers) being under construction (Rathore, 2015).

Figure 5.6: PPPs Structure of PCEL



Source: Compiled by the Author.

Table 5.10: Delhi Jaipur Highway Project Details**Available up to 2021**

Project Name: Six Laning of Gurgaon-Kotputli-Jaipur of NH-8 in Haryana/ Rajasthan on BOT(Toll) basis following by DBFO pattern (Greenfield Project).

Project Brief: The project involves six laning of Gurgaon Kotputli-Jaipur section of NH-8 from 42.7km to 273.0 km in Haryana and Rajasthan under NHDP-V

Sector: Transport

Sub-sector: Roads and bridges

Project Status: Operation and Maintenance Stage

Project Capacity: 225.6 km

Concession Duration: 144 months

Location: Multi-State/Centre

Bid Parameter: Revenue Share

Type of PPP: Build-Operate-Transfer (BOT) Toll

Government/ Non-Government: Government

Project Authority: National Highways Authority of India (NHAI)

Project Concessionaire: Pink City Expressway Private Limited

Project Timelines

Concession Agreement Signing Date 06-Jun-2008

Financial Closure Date: 03-Apr-2009

Supplementary Concession Agreement 20- Dec-2013

Date to start of commercial Operation (as per Concession Agreement) 01-oct-2011

Date to Start of Commercial Operation (actual): Not Available

Appointed Date 03-Apr-2009

Concession End Date (as per Concession Agreement) 05-Jun-2020

Construction Completion Date (as per Concession Agreement) 01-Oct-2011

Concession End Date (actual): Not Available

Construction Completion Date: Not Available

Project Cost

Project Cost (as per Concession Agreement) in Rs Crore 1,673.70

Project Cost (Revised) in Rs crore 1,896.00 Project Cost (Actual) in Rs - Not Applicable

Source: DEA (2021)

- **Profile of PCEL**

Pink city Expressway Private Limited (PCEL) is a Special Purpose Vehicle Company incorporated by M/s Emirates Trading Agency LLC (ETA) and M/s KMC constructions Ltd (KMC). ETA is the lead member of the consortium with an equity stake of 51% whereas KMC has a 49% equity stake in the SPV. ETA is a part of the ETA-ASCON-STAR group, a multinational organization with headquarters in Dubai. The group network encompasses 140 entities and associate offices in 28 countries. The group's consolidated revenue for the year ending 2007 was more than US\$ 5 billion. KMC has been among the leading Indian contractors for the past 36 years in the construction of major highway projects, airport runways, major bridges, and other civil engineering works.

- **Need for the project and its importance:**

The travel time will be reduced by 30% assuming the current speed of 100km/hour. The project is viewed as boosting economic growth and poverty reduction due to the economic activities in the junctions. This road will provide better connectivity between Delhi and Jaipur which will be strengthening the transportation network and ultimately improve the overall economy of the region.

Aims of Delhi-Jaipur highway:

- High-speed connectivity between Indira Gandhi International (Delhi International Airport DIAL) New Delhi to Jaipur.
- Avoid congestions at Gurgaon, Manesar, Dharuhera, Shahjahapur, Behror, Kotputli, and Shahpura and reduce delay and hence travel time to an appreciable extent.
- Enhanced safety and level of service for the road users.
- Superior operation and maintenance enabling enhanced operational efficiency of the Expressway.
- The incidental benefit would be that it will create employment during the construction phase and post-development. It will boost industrialization which will largely benefit the entire region.

Demand-Supply Gap

For the construction of roads and bridges, various kinds of materials such as subgrade soil, borrow area soil and granular sub-base material, fine and coarse aggregates are required. Material is easily available in nearby areas.

Employment generation

Highway construction broadly encompasses the issues relevant to the process of construction and maintenance, including the design contracting, implementation, supervision, and maintenance of highways and related structures.

Issues evolved in Delhi Jaipur Highway

- **Design Issues**

Press Information Bureau GoI Ministry of Road Transport & Highways on the topic of Flyovers on Delhi-Jaipur highway press release states as There are excessive numbers of flyovers on the highway. As of 2016 total of 93 flyovers have been proposed on six lanning of Delhi-Jaipur which is in the BOT model. Out of the 93 structures, 9 structures have been deleted & 17 structures have been delinked due to the non-availability of land. Construction of the 17 delinked structures envisaged in the project for smooth flow of traffic depends upon the availability of encumbrance-free land (Press Information Bureau, 2021). Out of the balance 67 structures, 61 structures have been completed and 5 structures are targeted to be completed by June 2016 and one flyover is targeted to be complete by May 2017. Hence the construction of these flyovers at locations where they are not required as per the manual of specification and standards in the road sector leads to wasteful expenditure.

- **Land Acquisition**

While procuring the infrastructure projects there is always a voice of “We’ll give up our lives, but we don’t give up our land” (Jain S, 2015). Thus, the central and state government should go into healthy land acquisition programs. One of the major problems faced by the Delhi-Jaipur project is land acquisition. The total estimated land for the project is 1477 hectares (ha) out of which the concessionaire has been made available only 1066 ha (including 308 ha of forest land). Out of the balance required even after disbursed for 169 ha giving a total of 84% of the total land required even after more than four and half years of the appointed date. There are poor land records for certain pockets of the land. Due to the thickly populated surrounding areas of the highway, these pockets of land are difficult to acquire. Moreover, in some cases, NHAI could not get clear land even after full payment to the owners. NHAI needs to expedite land acquisition at Gurgaon, Behror, and Kotputli, where work is pending and affecting the construction of flyovers. Also, about 4.55 ha of land for an approach to the major bridge at Km 76+980 is yet to be transferred by the irrigation department of the government of Haryana.

According to Road Minister Nitin Gadkari, the Delhi-Jaipur Highway was delayed by at least five years due to land acquisition issues and poor planning (Manchanda, 2016).

- **Forest Clearance**

Forest Clearance is also a major issue on the Delhi Jaipur highway. The project has three major forest clearances.

- a) Manesar Forest: 8.6 ha of forest land (46km+650to km 47+900) has not yet been handed over to PCEL for construction work.
- b) Bawal Forest: 10.9 ha of forest land (94km+340 to Km 97) required for construction of service road has not yet been handed over to PCEL.

- c) Sanjay Van: Although NHAI has obtained permission for free cutting from the Ministry of Environment and Forest (MoEF), permission is pending from District Forest Officers (DFO) Jaipur, which needs to be expedited.
- **Time overruns:** Time and cost overruns is a major problem associated with the public procurement in India. There are political economy reasons for starting several projects, which get allocated a limited amount of funds in the annual budget cycle. The appointed date was April 3, 2009. The scheduled date for completion

Reasons for Time Overruns in Delhi-Jaipur highway.

- There is a lack of supporting infrastructure facilities.
 - Delay in Finalization of detailed engineering plans, the release of drawings, and delay in availability of fronts.
 - Delay in finalization of the scope.
 - Industrial relations and law and order problems.
 - Delay and uncertainty in feedstock supply.
 - Pre-commissioning teething troubles.
 - Technology problems.
 - Geological surprises.
-
- **Cost overrun:** The original total project cost was Rs. 1896 crore, while the current cost is estimated at Rs. 3009 crores out of which expenditure of Rs 2617 crore (87%) has been incurred. The physical progress of the highway is 84% which also points toward cost overrun in the project.

Reasons for cost Overruns

- Time overruns.
- Changes in rates of foreign exchange and statutory duties.
- High cost of environmental safeguards and rehabilitation measures.
- Higher cost of land acquisition.
- Changes in the scope of the project.
- Higher prices being quoted by the bidders in certain areas.
- Under-estimation of the original cost.
- General price rise (Makam & Rao, 2015).

Summary

In the Delhi Jaipur Highway section, there is a lack of preconstruction activities like MoU, Land Acquisition, Environmental Clearance, Concession Agreement between NHAI and PCEL, Shareholder's agreement, Financial Closure operation, and management they type of PPPs contracts, the formation of construction companies and the related information are not disclosed. The project, as it stands today is suffering from time overrun, cost overrun, high user fees even in the construction period, poor road quality, and severe congestion causing considerable pain to the users. The diversion at least 40 are full of potholes. The places like Manesar, Kausala, kalyanpur, and Pragpur, skeletons of structures are lying idle since land is yet to be acquired. Diversions are at regular intervals and the condition of the road is bad due to rain. The drainage system is very poor. Further, NHAI has refused to allow thickening of the bituminous layer. The Concessionaire PCEL had requested NHAI to go for the highway norm in the diversions but NHAI has not agreed due to the cost implications. Due to problems of land acquisition and forest clearance, it has been observed that inventory worth Rs. 60 crores are lying unused in the yard of the concessionaire. There is needed to immediately address the issue so that pending structures can be completed at the earliest and the unused inventory utilized.

5.5 PPPs in Airport Infrastructure

5.5.1 Introduction of Indian Airports

Airports are the main infrastructure providers of air transport activities. It provides links between regions, countries, continents, and communities, it also acts as strategic catalyzers of economic activity (Sengur, 2018). Around the world, Airports from the very beginning were the fundamental part of a national and military air system (Augustyniak, 2010). To meet the growing domestic and international air traffic demand for improving tourism by attempting to resolve the problems stemming from public administration, PPPs as an innovation of project delivery alternative has emerged and been widely applied in many countries in the past two decades (Chan et al., 2011).

The development of Airports is the gateway for any country. It helps in raising trade and tourism inside the country. A country without a national carrier can still trade with other countries but it does not attract fancy of tourist for them an airport condition and the services provided the airports means a vital object to develop the economy of any country.

India also recognized the need to bring airport infrastructure to world-class levels and realized its inability to bring in the required capital thus, PPP was identified as a preferred route to infrastructure provision (Ohri, 2009). For this purpose, AAI came into existence on 1st April 1995. AAI is constituted as a statutory authority under the AAI Act, 1994. It has been created by merging the International Airports Authority of India and National Airports Authority to accelerate the integrated development, expansion, and modernization of the air traffic services, passenger terminals, operational areas, and cargo facilities at the airport sectors (AAI, 2021). The range of private participation in the airport sector is shown in table 5.11.

Table 5.11: FDI in the civil Aviation Sector in India

	% allowed	Clearance Routes
Airports		
Greenfield projects	100%	Automatic <74%
Brownfield/Existing projects	100%	FIPB>74%
Air Transport Services		
Scheduled air transport services	49% NRI (100%)	Automatic
Non-scheduled airline transport services	74%	Automatic<49% FIPB 49%<74%
Helicopter and seaplane services requiring DGCA approval	100%	Automatic

Ground Handling Services subject to regulations	74% NRI (100%)	Automatic <49% FIPB 49%<74%
MRO	100%	Automatic

Source: ICRA (2012)

5.5.2 PPPs Airports in India

These days Governments around the world are increasingly turning to PPPs and public concession models to help build and finance airport infrastructure initiatives, India is also one of them. Since the 1990s the Indian airports have undertaken measures to meet the increasing air traffic demand through PPPs. The civil aviation industry in India is undergoing rapid change, with private participation in PPPs mode, development of greenfield airports, as well as restructuring and modernization (brownfield) of old airports. In this way, international airports like Delhi, Mumbai, Bangalore, and Hyderabad have come up with PPPs model. Implementing PPPs model in Delhi and Mumbai airports has been rated among the best airports. The quality of services has also improved even in public airports. The development of Brownfield and Greenfield airports is a necessity to ease airport congestion in the Indian aviation industry. PPPs models like BOT and BOOT have been tried for the development of Airports in India. And due to these PPPs model's airports compete and being easy for the private sector to involve in airport sector investment (Narendra, 2016a). The following Table 5.10 shows the current PPPs model applied in various airports inside India.

Table 5.12: Scenario of PPP Airports

S.no	Project Name	Project Type	Modality Type	Location	Investment (Millions)	Year
1.	Delhi International Airport (DIAL)	Brownfield	BOT	Delhi	NA	2006
2.	Chhatrapati Shivaji Airport (Modernization) (MIAL)	Brownfield	Build Rehabilitate Operate Transfer	Mumbai	332.40	2013
3.	Mopa International Airport		BOT	North Goa	289.000	2017
4.	Hyderabad International Airport (HIAL)	Greenfield	BOOT	Telangana	NA	2004

5.	Bangalore International Airport (BIAL)	Greenfield	BOOT	Bangalore	NA	2004
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Source: (Public-Private Partnership (PPP)- Case study -India (as of July 2015), 2021)

Brownfield Airports: Brownfield airports are airports that are built on the already existing airports. The objective of Brownfield airports is to modify, modernized, and upgraded to accommodate state-of-the-art facilities and the growing passenger and cargo requirements. Two airports that have come up as brownfield namely Delhi International Airport, New Delhi, and the Chatrapati Maharaj Shivaji Airport in Mumbai. (De, 2008, and Dawda, 2015).

Greenfield Airports: Greenfield airport are those airports which are constructed from the scratch. There are no existing airports to be modernized or upgraded; instead, everything is built from the beginning.

5.5.3 Analyzing Aviation Sector-Regulatory Environment in India

The Ministry of Civil Aviation (MoCA) is the nodal ministry responsible for the formulation of national policies/programs for the development/ regulation of Civil Aviation in India. The objective MoCA is to ensure the orderly growth of Civil air transport in India. The function extends to overseeing airport facilities, (includes infrastructure), air traffic services, and carriage of passengers and goods by air. Director General Civil Aviation (DGCA) is a government agency which issues license to private sectors. DGCA and AAI work directly under the Ministry of civil aviation. The role of DGCA is as follows:

- 1) Regulate Air traffic in India.
- 2) Granting Air Operator's certificates to Indian carriers.
- 3) Regulate transport services operating from/within/over India (Both, Indian and foreign operators).
- 4) Grant clearance to scheduled and non-scheduled flights.
- 5) Issue certificate to aerodromes and CNS/ATM facilities.
- 6) Issue license to air traffic controllers (Gupta & Agrawal, 2013).

While managing, the airports AAI manages 126 airports, which includes 11 international airports, 94 domestic airports, and 28 civil enclaves (Singh, 2016). Revenue of these airports is generated from landing/parking fees and fees collected providing CNS (Communication, Navigation & Surveillance) & Air Traffic Control (ATC) services to aircraft over the Indian airspace.

In managing airports there is competition within private operators and operation management and their development agreements. There is a necessity to find a feasible solution to address growing demand exceeding airport capacity in a way that ensures the efficient functioning of an

airport without further capital-intensive and time-consuming airport capacity expansion or construction of new airports (Narendra, 2016b). Also, there is a heavy demand for investment in aviation infrastructure. Both the passenger traffic and cargo traffic are expected to grow at a compound annual growth rate from June 2003, due to these characteristics the AAI approved a modernization proposal through PPPs route for major airports in India (Jain, Raghuram, & Gangwar, 2007).

Development of airport in India (construction & operation) requires various permissions/clearances from public authority i.e. The regulations are as follows:

1. Permission for airport construction and operation from DGCA.
2. Environmental clearance from the ministry of environment and forest (MOEF).
3. Permission for mining, use of explosives, use of water from river and reservoir, pollution clearances for setting up of construction plants and equipment, permission for cutting of trees from the state government.

While clearing the above-mentioned 3 permissions from AAI, the author states that involvement of public agency, a partner, in PPP model may help in speedy clearances. At another hand, the AAI has the permanent license status. But private operators are required to receive a license which is generally issued for a short duration. Such licensing process creates uncertainty and adversely affects future operational and marketing planning of airports in India (G & Biju, 2001).

- **Airports Economic Regulatory Authority Act**

AERA: Airports Economic Regulatory Authority (AERA) Act was created in 2008 and is amended in 2019 (The Gazette of India, 2020). Under the Airports Economic Regulatory Authority (AERA) of India Act, 2008 has proposed to be set up to fix review and approve tariff structure for the aeronautical services and monitor pre-set performance standards at Indian airports. The AERA regulates tariffs and other charges for aeronautical services provided at civilian airports with annual traffic above 15 lakh passengers. It also monitors the performance standard of services across the airports. Under the Act, AERA is responsible for determining: (i) the tariff for aeronautical services at different airports every five years, (ii) the development fees of major airports, and (iii) the passenger's service fee. It can also call for the necessary information to determine tariffs and perform any other tariff-related functions, including amending the tariffs if necessary, in the interim periods.

5.6 Case of- Delhi International Airport

DIAL is the primary civil aviation hub for India (GMR, 2016). It is a symbol of India's burgeoning progress as an economic and travel center connecting to 127 destinations worldwide and serving hub for major airlines, including Air India, Vistara, IndiGo, and Spice Jet (Collins Aerospace, 2018). A recent report published by the Airports Council International (ACI) Listed Delhi international airport as the 17th busiest airport worldwide (ACI, 2020).

In the financial year of 2020, it has handled more than 67 million passengers (Statista, 2021). The increasing number of passengers who use DIA tends to boost in the economic growth of India. As per the airport master plan by DIAL, various facilities are planned based on the airport demand. It has the target of airport passengers to 100 million by 2025. To fulfill the target there is a massive necessity in airport infrastructure modernization. DIAL is the recently developed Brownfield airport in Delhi. It has been developed under the BOT model. Prior to this, Delhi airport was served by DIAL Brownfield. DIAL is taken as a case to study the development of Brownfield airports in India.

The 1st objective of the case study is to identify the issues of risk in the development of brownfield airports in India. The 2nd objective of the case study is to make policy suggestions for the future development of the brownfield airport in India. Overall, it discusses on risk and policy suggestions in the airport sector of India. Table 5.13 shows the important timeline and the history of DIAL on the issues of modernization.

Table 5.13: Delhi International Airport Important Timeline

Timeline	Development
1939-45	Built during the second world war to serve as an air force station.
1962	Operations were shifted from Safdarjung airport owing to rising passengers' traffic.
1986	Commissioning of Terminal-2.
2006	Delhi International Airport Limited consortium accorded approval to develop and manage the airport.
2007	Foundation stone laid for Terminal-3.
2008	IGI Airport third runway commences operations.
2009	New domestic departure Terminal-1D inaugurated.
2010	Inauguration of Terminal-3.
2011	Ranked as the fourth best airport in the world in the category of 25-40 MPPA by Airport Council International.
2013	Ranked as the second-best airport in the 25-40 MPPA category by ACI Became the first airport in the world to achieve ISO 22301:2012 certification.
2014	Became a Star Alliance member.
2015	Ranked the world's best airport by ACI in 25-40 MPPA category.
2017	Ranked as the second-best airport in the over 40 MPPA category.
2018	Investment of Rs 9,000 crore (US\$1.28 billion) to handle 100 million passengers annually is expected to be made in the next three years ranked among the most punctual airports in the world.
2019	Delhi Airport became India's First AEO certified airport. The DIAL awarded with the best aerodrome which is given by ACI in the category of airports that can handle more than 40 MPPA. Awarded as a 4-star airport rating and judged the best airport in India at the 2019 Skytrax world airport awards.
2020	DIAL launched the country's first airport Covid-19 testing facility at the DIAL for arriving international passengers. DIAL inaugurated North India's largest hi-tech plant nursery with more than 1.16 million indoor plants. Also awarded a 4-star airport rating and adjudged the 'best airport in India and central Asia' for the second consecutive year in 2020 Skytrax world airport awards. First airport single-use plastic-free airport in India.

Source: IBEF (2021).

5.6.1 PPPs in DIAL

In September 2003, The Indian Cabinet approved the restructuring of Delhi and Mumbai airports through the Joint venture. AAI incorporated a subsidiary company viz. M/S Delhi International Airport Pvt (DIAL) and sold 74% of the shares of DIAL to the JV Consortium. AAI subsequently signed on an Operational Management Development Agreement (OMDA) with DIAL. The AAI handed Delhi airport to DIAL on May 2006 on an ‘as is where is’ basis and granted DIAL the exclusive right to undertake functions of Operations, Maintenance, Development, design, construction, modernization, finance, and management of the airport for 30 years (Kumar, 2017). There have been significant improvements in services at DIA for the traveling public. The new Terminal T3 was completed within the time for the Commonwealth Games 2010. The Airports Council International has adjusted the airport as the second-best in the world in the category of 25-40 million passengers per annum. For further restructuring, the bidding process began in May 2004 with an original the following sub-sections analyses the findings for the Delhi International Airport case along with the identified critical events.

- **Bidder details and Evaluation of Technical Bids**

About the bidding process, this study follows Pratap & Chakrabarti, (2017a) research on DIAL from pages 326 to 361. At the starting of the bidding process, 10 consortia submitted Expression of Interest (EOI) only nine bidders qualified as one of the consortia had partnered with an airport consultant rather than an airport operator. On the final bid submission date of September 14, 2005, four other consortia also dropped out of the process. Two bidders (DLF and Hiranandani) opted out citing that the OMDA document severely restricted the commercial activities which made financing the operation unviable. Similarly, the other two bidders (Bharti and L&T) dropped out citing stiff conditions and development timelines. The final five bidders and their characteristics for Delhi Airport are discussed in table 5.14 and table 5.15.

Table 5.14: Bidding for the Delhi Airport RFP stage

	Private entity	Experience Airport Operator
1.	Reliance Infrastructure	ASA(Mexico)
2.	GMR Infrastructure	Fraport (Frankfurt, Germany)
3.	DS Construction	Munich (Germany)
4.	Sterlite Group	Macquarie-ADP (France)
5.	Essel Group	TAV (Turkey)

Source: (Jain, Raghuram, & Gangwar, 2007)

Table 5.15: Airport consortia -Original evaluation scores (%)

Bidder	Delhi International Airport	
	Management capability, commitment, and value add	Development capability, commitment, and value add
Reliance-ASA	80.2	81.0
GMR-Fraport	84.9	80.1
DS Construction-Munich	72.7	69.9
Sterlite-Macquarie-ADP	57.0	61.9
Essel-TAV	39.2	40.3

Source: (Pratap & Chakrabarti, 2017b)

Private Partners on Delhi Airport on RFP stages and the characters are summarized below:

- Reliance-ASA:** A high-level offer with a strong Indian partner and an experienced operator. It has limited experience in the operating airports. But recently it has expanded its limits to manage Mexican airports, and in 2019 Reliance Infrastructure bagged Rs 648 crore contract from the AAI, to build a new airport at Hirasar, in Rajkot district of Gujarat (ToI, 2019).
- GMR-Fraport:** An excellent overall offer that got an overall high rating across in areas, management, and development, with the major exception of the initial development plan. It is a highly experienced airport operator and high-quality business plan, Transition Plan, and Environmental Management Plan. GMR's international experience was a wide range of environments was a strong factor. GMR group is one of India's growing infrastructure companies with an interest in airports, energy, highways, and urban infrastructure and it has a presence in several countries like Turkey, South Africa, Indonesia, Nepal, and Singapore. GMR group is the lead member of the consortium, along with Fraport AG is the airport operator and Eraman Malaysia as the retail advisor.
- DS Construction-Munich:** A medium-level offer with an experienced airport operator and Indian development partner. It has a significant weakness, which was reflected in relatively low marks in several management and development areas, was the lack of experience of airport operator beyond Munich and the lack of major aeronautical development experience.
- Sterlite-Macquarie-ADP:** Throughout the assessment, Sterlite-Macquarie-ADP has been marked down owing to the failure to provide the required information. Additionally, the Indian partner has limited relevant experience for an airport project. Further, the Sterlite group's experience could not be considered in the evaluation.

- **Essel-TAV:** The offer was of poor-quality suffering from the combination of an airport operator with limited experience focused on operating terminals rather than airports and an Indian party with no direct relevant commercial experience and expertise. This lack of experience was reflected in low marks for operating an airport, aeronautical operations, airport development experience other than terminal development.
- **The Bidding Process of DIAL**

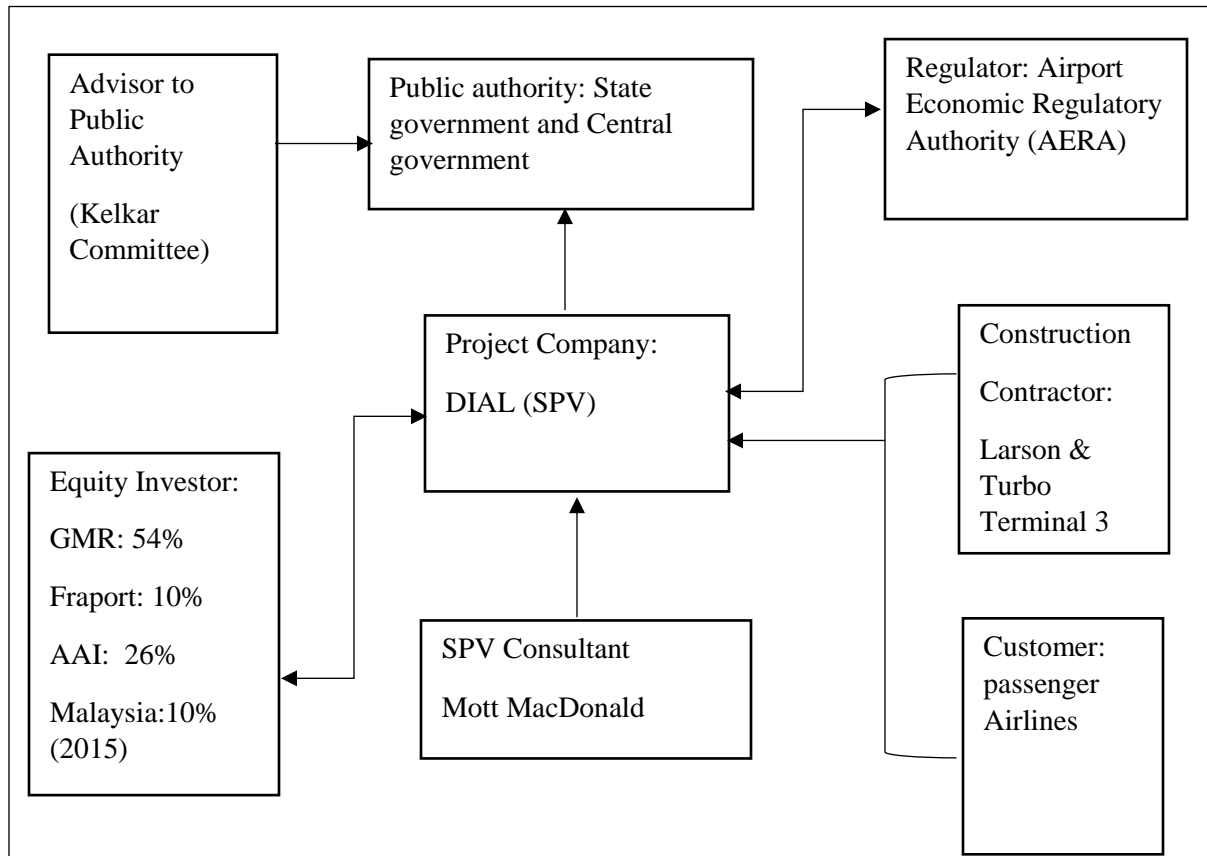
In November 2003, a committee headed by Naresh Chandra Gupta supported AAI's plan for the modernization of India's airports. In November 2003, a committee headed by Naresh Chandra Supported AAI's Plan for the Modernization of India's airports. The Committee noted that in the year 2003-04, the two largest airports in the country -Delhi and Mumbai- accounted for more than 49% of the passenger movements and 59% of the cargo movements for the entire country. Table 5.16 shows the bidding process for Delhi airport.

Table 5.16: Options for Modernizing Delhi International Airport

Allocation of responsibilities	Option 1	Option 2	Option 3
Ownership	State	State	Private/Mixed
Investment	State	Private/mixed	Private
Operations & Management	Private	Private	Private
Strategies for private participation	Management contracts, Multiple concessions	BOT (Build-Operate-Transfer) schemes, Long-term lease	Trade sales, Strategic buyouts
Examples	Hong Kong, Santiago (Chile)	Athens, Greece Bogota, Colombia	British Airports Authority, Australia, Scotland

Source: World Bank (1996). Adapted from the Naresh Chandra Committee Report, 2003.

Figure 5.7: PPPs Structure of DIAL



Source: Based on UNIDO (1996) Compiled by the Author

Figure 5.7 shows the PPPs construction of DIAL. The Initial equity investor from the private sectors is GMR, Fraport and Malaysia sharing 54%, 10%, 10% while the AAI shares 26%. After the date 2015 the Malaysia sells the 10% equity to GMR and GMR possess 64% of equity investor in DIAL. For the private sector the SPV consultant is Mott MacDonald. The Kelkar committee is form the AAI side. The DIAL project has the issues between the Operation and Management and timely completion of the project. The table 5.17 discusses the issues between the private Authority DIAL and Government Authority AERA briefly.

5.6.2 Issues Between DIAL and AERA

The conflict between the AERA and DIAL is discussed below.

Table 5.17: Issues between the AERA and OMDA

Sr. No	Issues highlighted in the CAG report
1.	The conflict between OMDA And the AERA
2.	Concession period
3.	Development fees
4.	Commercial Exploitation of Land
5.	Issues in connection with commercial exploitation of the land
6.	Issues in connection with Airport Development Fee charged by DIAL to the embarking passengers
7.	Issues in connection with DIAL's Financing of the project
8.	Issues concerning incentives conferred upon DIAL despite the delay in execution of Mandatory Capital Projects
9.	Issues concerning outsourcing of Non-Aero Services through Joint Ventures
10.	Funds Diverted from the Passenger Service Fee Account
11.	The Divergence between Original Project Cost and the Actual Project Cost
12.	Deficient land Records at the IGIA
13.	Change in the Major Development Plan and increase in Ground Floor Area
14.	Highly Concessional Lease Rent
15.	Sharing of Revenues from existing Leases with DIAL
16.	Delayed payment of Retirement Compensation by DIAL
17.	Irregular Withdrawal from the Escrow Account

Source: CAG (2012)

Some of the major Issues between from table 5.17 AERA and DIAL areas are:

- **Concession period**

Delhi International Airport is managed by the Delhi International Airport Limited (DIAL) since 2006. Following an international complete bidding process, the concession to operate and develop Delhi airport was signed between AAI and DIAL. The consortium was formed to oversee the operation and construction of Delhi International Airport's terminal and runway buildings. Delhi International Airport limited took over the management of DIAL in January 2006 and commenced with the improvement essential to upgrade the passenger services to the world standard requirement. In June 2010 Delhi International Airport Limited opened an integrated passenger terminal 3 which increases the capacity of departure for Delhi Airport and can handle up to 37 million passengers per annum. The initial period of the concession is for 30 years. According to the Report of the Comptroller and Auditor General of India for the year ended March 2012 on Implementation of Public Private Partnership Indira Gandhi International Airport, Delhi pointed out that DIAL enjoys the unilateral right to extend the concession period for 30 years "on identical terms and conditions" provided that no JVC event of default had taken place during the 20th and 25th years of the first concession period (Union Government Ministry of Civil Aviation, 2012). The report argues that this provision entitles DIAL to extend the period of concession for another 30 years.

- **Development Fees**

The OMDA specifically provided the authority to DIAL to arrange for financing through debt and equity contributions for its obligations including the development phase of the airport. DIAL is financed approximately 27% of the development through Development Fees (DF). Later, GMR responded by pointing out that the levy of DF became necessary because AAI was unable to infuse further equity. On the other hand, provisions mandating shareholding thresholds in OMDA prevented the private shareholders from infusing capital, since AAI would be diluted beyond its prescribed limits.

- **Project Partners Role**

The design of DIAL Airport Terminal T3 was prepared by Mott Macdonald and HOK(UK). Larsen & Toubro Airbiz and Meinhardt Engineering were the construction contractors for the terminal building, aprons, and the new runway. Parsons Brinckerhoff International was a project management consultant (Airport Technology, 2021).

- **Commercial Exploitation of Land**

The report pointed out that under the terms of OMDA, DIAL could utilize 5% of the total demised premises for commercial purposes, i.e., 239.95 acres. The report alleged that the potential earning capacity of the land in Rs 681.63 crore per acre and the current value of the land is Rs.100 crore per acre. Thus, for the total area of 239.95 acres, the possible according earning from the land according to DIAL's calculations, amount to Rs. 163,557 crores while DIA is permitted to use the land for commercial purposes only for Rs. 100 per year. The comments pointed out that a fraction of the leased land was made available for commercial exploitation under the policy on airport infrastructure (1997) that identifies increasing revenues from the non-aeronautical assets as one of the major thrusts in this area.

- **Upfront Fee Issue**

The report CAG found that a one-time upfront fee of Rs. 150 crores were fixed for the DIAL modernization by MoCA. But the inquiry from the CAG and the MoCA explained that the upfront fees have no relation to either the extent of land or the assets of the airport. However, the CAG found that when DIAL sought the lease of an additional 190.19 acres of land, to fix a lease rent for this land. AAI used the amount of upfront fee to arrive at a rate per acre and applied it to the additional land thereby fixing a one-time fee of Rs 6.19 crore (Rs.150 crore/4608.9 acres). On the other hand, AAI leased out 7.60 acres of land to DGCA and Bureau of Civil Aviation Security at a license fee of Rs. 2.41 crore per annum. Application of this license fee with the same escalation clause for 190.19 acres of land would amount to Rs. 4,534 crores for 27 years. The report claimed that AAI decided to lease out the required land for Rs 6.19 crore without entering good negotiations with DIAL. GMR's response to MoCA was the CAG is mistaken in its view about the parcel of land that was leased out in this phase.

- **DIAL's Financing of the Project**

The report observed that out of the total capital expenditure of Rs. 12,502 crores as accepted by AERA, only 19% have been promoter's contribution whereas the development fee levied by DIAL underwrote 27% of the cost of development. The report inferred that with an equity contribution of Rs. 24.50 billion out of which the private consortium's share was Rs.18.13 billion. In this way, DIAL obtained an IGIA for 60 years in addition to commercial rights on land valued at Rs. 240 billion with earning potential, estimated by DIAL, at Rs.1,635.57 billion. Table 5.18 shows the gap and the lack of availability of data in further discussion of DIAL PPPs project.

Table 5.18: Total project Cost for Delhi Airport allowed by AERA

Particulars	Rs in Crores	
	A	B
Final project cost as submitted in DIAL Application		12857.00
Items proposed to be excluded	NA	NA
Apron	23.82	
R/W 10-28	37.50	
Escalation for reinforcement	35.67	
Upfront fee	150.00	
Gross floor area 8652 m ²	107.15	
Total exclusions (B)		354.14
Total allowable project cost (A-B)		12502.86

Source: AERA order No. 30/2012-13 in the matter of Review of levy of Development Fee at Indira Gandhi International Airport, New Delhi passed on December 8, 2012, viewed on Jan 14, 2021 (<http://aera.gov.in/writereaddata/order/281.pdf>)

- **Joint ventures in Non-aeronautical service**

The DIAL reports point that DIAL has outsourced most of the non-aeronautical services through the JV route to other service providers. The revenue share of DIAL in these JVs ranged from 10 through 61% and the equity participation ranged from 26 to 50%. The report says that the independent auditor appointed by DIAL under OMDA had no access to the account of JV with the result that the revenue-share payable to DIAL could not be independently ascertained by the CAG.

5.7 Summary

Modernization of DIAL is a good example of Airport development under PPPs. Since no history is available for this kind of project model, many of the issues of the risk could be identified only during the execution and operation of the project. Policy suggestions are based on mitigation of the issues of risks identified in the case study of DIAL. These may help modernize DIAL and be the lessons for other Airports.

- **Project Bidding Process:** time frame for the selection of concessionaire needs to be brought down. This could be done probably by pre-qualifying the bidders. Only these prequalified bidders shall be allowed to submit a financial bid. In the case of the DIAL

bidding process, there were 10 consortia showed the EOI. By the time of the final bid, only five consortia took the participated in the process due to the reason that the OMDA document was severely restricted the commercial activities. For transparency and submitting numerous consortia into the bidding process, the OMDA should be clear in the criteria.

- **Project Cost:** Financial bid should be invited based on fixed price rather than cost-plus model. This will help in achieving cost efficiency in projects. DIAL was for 30 years the viability of VfM which was not clear for the consortia.
- **Project time Control:** Land acquisition is one of the hurdles in India in Infrastructure development projects. Land acquisition for modernizing Brownfield airport takes a long time. The time efficiency of land acquisition needs to be improved. It requires to be made transparent and time bound. Some probable reasons are that may be the highly regulated land transactions due to rigid government rules and procedure. Ownership of land has highly emotional cultural, social-political, and economic attachment. Whenever one is asked to renounce the ownership of land in the interest of developmental projects he tends to oppose. This opposition are due to ambiguous laws, inadequate compensation package, and non-transparent rehabilitation package. It is hard to motivate the landowner to surrender their land easily for infrastructure projects. If possible, the affected landowners shall be made equity partners to take care-off their long-term interest. Land acquisition disputes can be probably minimized by offering market liked compensation of the land.
- **Project Regulation and Control**

Airports are a high-risk zone from a security point of view, due to the heavy movement of high-profile people, the public, and foreigners. The security of the airport should be taken by a public authority in the national interest. Also, the air traffic control is high tech activity which requires a lot of coordination, at the national and international level. Only the centralized agency can take over such responsibility. Around the world, the air traffic control is carried by public authority.

CHAPTER 6: CONCLUSIONS

6.0 Introduction

The rationale for undertaking this study was driven by the concerns raised by many researchers in the field, of PPPs study. It relies on a qualitative case study approach using secondary data and limited primary data. It describes the Indian PPPs focusing on the highway and airport as multiple case studies. It shows the implementation phase of a PPPs lifecycle in India as a most critical stage of the partnership's development process, as it is the stage when partnership progresses from agreements, contracts, and plans on respect topics to almost everyday life.

The significance of research in India stemmed from that India is one of the common users of PPPs after its economic liberalization in the 1990s. The GoI is rapidly employing PPPs in the Indian infrastructure market, as the economic development needs in the country. This is the reason that GoI believes in investing in PPP projects is a key component of the Indian economic development strategy. However, not much is known about the Indian way of PPP management in India. PPPs are newly introduced in the Indian market in either theory or practice, also the research in this vital area is very few both in theory and practice. India is a huge country with ample opportunities for foreign players to invest, there is a critical need to review PPPs experience and conduct field research to explore the challenges facing the management of PPPs during their implementation period. It is assumed that the current research provides the Indian scenario of PPPs development in policy and implementation phases.

Taking two PPP projects in India as case study organizations, this research investigated the management of the implementation phase of PPP projects in the Indian context. The purpose of this research was to offer a better understanding of the policies and challenges during their implementation phase.

Overall, the Indian PPPs could be defined as: *The Indian PPPs case is of interest due to the highly fragmented and decentralized nature of the program. The character of Indian bureaucracy in general, a multitude of governmental organizations provide alternative routes for project implementation in an uncoordinated manner. These organizations include PPPs units at the central and state level, as well as within some sector-specific bodies. Also, a variety of local development agencies litter the landscape of project identification and development.*

The cases of Delhi- Jaipur Highway construction and modernization of DIA provide a glimpse of the set of complex issues that can arise in the real-life implementation of infrastructure PPP projects. The cases illustrate several concepts discussed and point out that the complexity of large PPPs projects.

6.1 Findings of the study:

The study primarily tracks the growth of PPPs overtime at the global, National and Sub-national and their relevance, as an alternative model of infra services in the Indian context. Some of the important findings of the study are presented as follows:

There has been a massive increase in the number of infra PPPs projects and the volume of investment over the last 15-20 years in India. This has enhanced the regional and sectoral availability of infra services. The trend of PPPs in India is not different from the global trends. In India too, Infrastructure development through central and state governments is generally concentrated in a few sectors and regions. As of March 2020, a total number of 1824 PPP projects worth US\$ 327 billion are in different stages of implementation in India. Out of these approximately 57% of the projects fall under the transportation sector, which in turn, is exposed to maximum risk due to coronavirus outbreak.

The highest concentration of PPPs is in Transportation (National Highways) and urban infra sector projects, these sectors also account for the highest share of investment. This analysis reveals that a few economically developed Indian states account for more than 50 percent of the PPPs projects e.g. Maharashtra, Gujarat.

The determinants of investment in infrastructure PPPs in India empirically prove that macro-economic variables like FDI, foreign exchange rate, and the market demand factors determinants like population and per-capita income are highly significant in determining PPP infra investment. Besides these economic factors, a set of governance factors also seems to be determining PPPs investment in India. Almost all states have their own legal and institutional frameworks which are categorized in category I, category II, and category III. The correlation coefficient results according to the worldwide governance indicator reveal that still there is corruption which may inversely be associated with PPP infra investment, whereas, the voice and accountability, government effectiveness, etc. have a positive association with investment. Hence the study observes that in addition to economic factors, political factors are crucial to attracting private investment in the Indian infrastructure sectors. In the private sector financing India's infrastructure finance reveals that the private sector infra investment is largely financed by debt capital.

- **Financial sector constraints to private financing of infrastructure**

GoI has encouraged private sector investment, both domestic and foreign in almost all infrastructure units through the PPPs mode. Private sector investors would look for the commercial viability of investments. Infrastructure projects are complex, capital intensive, long gestation projects that involve multiple and often creates a risk to project financiers. Also, infra-projects are characterized by non-resource or limited resources financing, i.e., lenders can only be repaid from the revenues generated by the project. Especially in PPPs infrastructure projects, it took a long time to generate revenue by the project. This limited recourse characteristic and the scale and complexity of an infrastructure project make financing a tough challenge, unfortunately, renegotiations and cancellations of the project may tackle the ways.

- **Land Acquisition**

The reluctance to fast-track land acquisition has caused lengthy project delays and cost overruns. The difficulty of acquiring land in a reasonable period has tended to discourage investment in road sectors, where land is a critical factor. While snatching land from local communities, the communities feel cheated out from the path of development, which leads to distrust and disputes. Especially, in India, the rehabilitation packages are not planned meticulously, and execution is inefficient. For instance, the National Highway Authority of India bids out highway projects even when it has acquired only 10-15% of the land, or even less, assuming that the balance land will be acquired by the time of financial closure and commencement of construction.

- **Lack of governmental organizations**

In India, both the central and states government are aiming to use maximum PPPs projects to fulfill the infrastructure gap. But PPPs represent a claim on public resources that need to be understood and assessed. Especially in India due to the project nature, the project lacks organizational knowledge these projects are often going in complex transactions, needing a clear specification of the services to be provided and an understanding of the way risks are allocated between the public and private sector. The lack of monitoring organization and the criteria of monitoring are major hurdles.

- **Time and Cost overruns**

Time and cost overruns are major problems associated both in traditional and PPPs procurement infra projects. There are massive reasons in India for which delay the project. Political economy is a major reason for starting many projects, which get allocated a limited amount of funds in the annual budget cycle leading to massive time cost overruns.

6.2 Suggestion for Policy Implications

This section will first discuss meanings that scholars attach to a policy paradigm in general, essentials that a policy paradigm typically includes, and why and how a policy paradigm becomes useful in the Indian public infrastructure market.

- **Regulatory activities of various infra-agencies:**

In the current context, the NHAI and AAI with other respected institutions play twin roles-both as developer and regulator. There is a felt need for an independent regulator for the national highway and AAI for effective monitoring of the projects by their desired objectives. Both in the road and airport sectors, there is the necessity for independent monitoring organizations. Hence, the present study strongly urges the setting up of an independent regulator for National Highways, Airports, and other infra sub-sectors.

- **Standardization of PPPs phases:**

In India, at both the central and state level several projects have got stuck over long periods in various stages of implementation. While addressing such issues and their consequences on the cost and time overruns, the government needs to bring in the standard timeline for project execution. In the current context, there is a lack of study on inter-organizational relations.

- **Formulation, execution, and regulatory activities of various agencies:**

In the road and highway sector, NHAI plays twin roles-both as a developer and regulator. There is a need for an independent regulator for the national highways for effective monitoring of the projects by their desired objectives. The existing toll-related disputes, operation and maintenance quality issues, financing, renegotiations, and other issues need to be independently reviewed and required action. Hence the present study from the chapter 5 case study section Delhi-Jaipur highway section urges the setting up of an independent regulator for national highways, railroads, and other infra sub-sectors.

- **Financing of Infra PPPs:**

The reformation of financial sector policies of the infra-PPP projects finds that, in India, PPP projects are mainly financed by commercial bank debt, which is normally short-term to medium-term in nature, which is not completely suitable for long-term infra investment needs. Hence, the government needs to take measures for developing the capital market by way of exploring the use of provident and pension funds and through developing an innovative bond market to meet the long-term financial needs.

- **Foreign Funds and FDI**

At the macro level, many foreign funds and long-term foreign currency boards are expected to flow towards India's infra sector. The government needs to harvest potential investment by creating a business-friendly environment. While analyzing data the PPPs and FDI both ways are entering in the same way as private sector participation. From the author's view, there should be a differentiation between the FDI and PPPs. Till these days the FDI and private sector investments outside form India are not clear.

- **Lack of PPPs database**

Despite the recommendations of expert groups like the Rakesh Mohan Committee (1996), Kelkar committee, National Statistical Commission, and many others for building a strong database in respect of infra-PPPs, project-level data on PPP projects is still unavailable in the public domain. The present PPP database provided by the PPP cell, PPP toolkits, Department of Economic Affairs, Government of India, is very scanty with many data points are missing. For example, the concession agreement is not disclosed to the public in a timely. In the current context, it is very hard to decide the success or failure of PPPs projects in India. For this purpose, the author recommends that data of financial aspects of projects, like the total project cost-estimated and actual-with respect to construction, operation, debt, and equity ratio, cost of debt, discount rate, project-level financial burden, mostly the nature of investment the period time should be included in the government database on time.

Concerning PPPs bidding process, the data on the number of expression of interests (EoI), number of requests for Qualifications (RfQ) number of Requests for Proposals, (RfP) number of financial bids, method of procurement, and time-taken for each stage of the procurement process need to be added to the database.

The case study of the Delhi-Jaipur NH 8 the Highway section has a massive lack of data. Further, the Delhi-Jaipur section reveals that the operation and maintenance of PPPs are not uniform with many vital elements of the construction and operation stage missing in

respect. The Author recommends uniformity in reports to compare each project concerning their laydown objectives. Especially the construction companies and the agreements are not in the public domain.

- **PPP project approval methods**

In the current context, project approval is a long process going through many levels. For example, in the road sector national highway PPP projects are appraised by the Planning Commission before the PPPAC approves the projects. Further in addition to the prior approvals, if a given project avails VfM, then, the project needs to be approved by Empowered Committee. Later, the project needs to take various clearances from different ministries and departments. The whole process of approvals and clearances delays the process of construction, resulting in time and cost overruns. Hence the Author recommends a revisit to the present process of approvals so that undue delays are avoided.

- **Independent Monitoring organizations**

To address the problems of stakeholders including developers, it is very essential to establish independent sector-specific regulators. The GoI needs to take appropriate measures on the formation of independent monitoring organizations. Monitor organizations need to do:

- a) Monitor contract compliance and service performance by the private party and ensure penalties or bonuses.
- b) Monitor and ensure compliance by the government with its responsibilities under the contract.
- c) Monitor and mitigate risks
- d) Evaluate and allocate risk to the appropriate party resulting from the contract.

Future Research

Considering the role of specific factors or variables in determining PPPs investment in India. Sector-specific determinants will assist the PPPs implementing agencies to take appropriate actions to see that all sectors that require investment through PPP models. The study can be further extended to understand the positive and negative socio-economic factors by analyzing VfM analysis.

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ANNEXURES 1: PPPs in developing countries in the last decade

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PPP experience	Countries
0	Afghanistan, Belarus, Belize, Benin, Bhutan, Bosnia and Herzegovina, Botswana, Burkina Faso, Cape Verde, Central African Republic, Chad, Dem Rep Congo, Fiji, The Gambia, Guinea- Bissau, Guyana, Lesotho, Maldives, Moldova, Mongolia, Montenegro, Niger, Paraguay, Somalia, São Tomé and Príncipe, Tonga, Vanuatu
1	Comoros, Kosovo, Krygyz Republic, Lithuania, Macedonia, Malawi, Mali, Papua New Guinea, Timor-Leste, Uzbekistan, Zimbabwe
2	Azerbaijan, Rep. Congo, Haiti, Iran, Islamic Rep, Liberia, Myanmar, Namibia, Sudan, Syrian Arab Republic, Tajikistan
3	Cuba, Djibouti, Ethiopia, Madagascar, Serbia, Sierra Leone, Togo, Tunisia, West Bank and Gaza, Republic of Yemen, Zambia
4	Cameroon, El Salvador
5	Iraq, Jamaica, Lebanon, Nicaragua
6	Angola, Côte d'Ivoire, Gabon, Kazakhstan, Mauritius, Mozambique, Rwanda
7	Armenia, Georgia, Ghana, Morocco
8	Ukraine
9	Bolivia, Panama
10	Kenya, Senegal
11	Albania, Tanzania, Venezuela, RB
12	Dominican Republic
14	Cambodia, Guatemala, Honduras
15	Jordan
17	Egypt, Arab Rep, Uganda
18	Ecuador, Uruguay
20	Costa Rica
21	Lao PDR
22	Nepal
24	Algeria
29	Romania
32	Russian Federation
34	Nigeria
40	Bulgaria
41	Bangladesh
45	Indonesia, Pakistan
48	South Africa
49	Philippines
55	Sri Lanka
64	Malaysia, Thailand, Vietnam
67	Peru
73	Chile

85	Colombia
109	Mexico
121	Argentina
132	Turkey
387	Brazil
639	India
680	China

Source: Do Countries Learn from Experience in Infrastructure PPP? PPP Practice and Contract Cancellation by Darwin Marcelo, Schuyler House, Cledan Mandri-Perrott, and Jordan Schwartz. (World Bank Group: Public-Private Partnerships Cross-Cutting Solutions Area, May 2017.)

Annexure 2: PPP Project cycle

Phases	Stages	Steps
1. Project Identification	1.1 Selection of Project	<ul style="list-style-type: none"> • Identification • Output Specification
	1.2 Evaluation of the PPP choice	<ul style="list-style-type: none"> • Affordability • Risk allocation • Value for Money
2. Detailed Preparation	2.1 Organization	<ul style="list-style-type: none"> • Project team • Time Frame • Advisory experts •
	2.2 Tendering Process	<ul style="list-style-type: none"> • Detailed PPP design • Procurement method • Evaluation criteria • Draft PPP contract
3. Procurement	3.1 Bidding process	<ul style="list-style-type: none"> • Prequalification • Invitation to tender • Interaction to bidders • Award
	3.2 PPP contract	<ul style="list-style-type: none"> • Final PPP contract • Financial agreement

4. Project Implementation	4.1 Contract Management	<ul style="list-style-type: none"> • Monitoring of the PPP project • Dispute resolution • PPP contract termination
	4.2 Evaluation	<ul style="list-style-type: none"> • Institutional Framework • Analytical Framework

Source: World Bank (2009)