1.2.10 In response, consultations were held by Central Government entities with developers, financiers and other stakeholders to assess and address the situation. The 'Committee on Revisiting and Revitalising Public Private Partnership Model of Infrastructure' chaired by Dr. Vijay Kelkar (better known as the Kelkar Committee) examined various aspects and made recommendations on re-invigorating private sector investments in infrastructure sub-sectors. Though some of these measures have been implemented and pick-up of activity has been seen in the roads sector, the efficacy of the measures to re-energise the sector to meet India's aspired level of infrastructure investments and the sustainability of the measures in the long run needs further reflection.

1.3. Statement of the Problem

1.3.1. Public Private Partnerships (PPPs) are encouraged and facilitated in India and viewed as a preferred mode of delivery of infrastructure projects, particularly in the transport and energy sector. Inadequate bid response to certain projects, cancellation of projects after award and renegotiation of projects results in dilution of confidence of the public authorities, private sector and the users in the efficacy of the instrument in providing a robust delivery of infrastructure services.

1.3.2 New models of implementing PPPs are being attempted in the roads sector, such as Hybrid Annuity Model and Asset Recycling model (or Toll Operate and Transfer- ToT model) to obtain a better bid response and

financial closure for the projects, which could change the optimal risk matrix of the projects. It is also envisaged that these may be replicated in other sub-sectors such as airports, railway station redevelopment, etc. An assessment needs to be made as to whether the risk framework in such models is sustainable and replicable over the medium and the long term.

1.4. Literature Review

1.4.1 At the outset, research on Public Private Partnership model conducted earlier in Indian Institute of Public Administration was studied. Ravi Kant (2012-13) examined PPPs for National Highways in India and undertook evaluation of the National Highways Development Programme (NHDP) to assess whether efficiencies typically associated with private sector have been obtained in NHDP. The study examined projects implemented by National Highways Authority of India (NHAI) till November 2012 and concluded that:

i. In case of completed projects, the average time over-run was 20.3 months, 7.0 months and 10.0 months for EPC, BoT (Annuity) and BoT (Toll) projects respectively.

ii. In case of projects under implementation (which were due for completion during November 2012), the anticipated time over-run was

49.8 months, 42.6 months and 19.1 months for EPC, BoT (Annuity) and BoT (Toll) projects respectively.

iii. Overall, the average time over run for EPC projects was twice the time over run for BoT (Toll) projects.

iv. The study concludes that cost overrun was not applicable for BoT (Toll) and BoT (Annuity) projects as the construction risk was borne by the Concessionaire, unless there was a significant change in the scope of work. There was an average of 30 percent cost over run in EPC projects. The total loss to the exchequer is estimated as 63 percent by the EPC projects, taking into account assumptions of loss of toll collection to the government and interest cost during delay period.

v. There was reduced litigation for PPP projects (BoT Toll and BoT Annuity) vis a vis EPC projects.

vi. There was increase in the projects awarded on PPP basis during 2009, 2010 and 2011, with an increase in the average length of the projects awarded in PPP mode.

1.4.2 The study by Ravi Kant provides documentation of NHDP projects till 2012 and establishes the inherent advantages of PPP projects over EPC mode of procurement in an empirical manner. This provides an empirical context for the *instant study* to assess the performance of national highways PPP projects from three perspectives, viz.:

First, studying the risk framework of the current modes of delivery of NHDP projects, such as primacy being accorded to EPC projects and its implications;

Second, the study shows that the time overrun for projects to be completed by 2012 was *higher* than the time overrun of completed projects (i.e. 49.8 months, 42.6 months and 19.1 months versus 20.3 months, 7.0 months and 10.0 months for EPC, BoT (Annuity) and BoT (Toll) projects). This gives an indication that possibly the strain in the system had started building which culminated in terminations, delays and financial stresses in the later years; and,

Third, the earlier position of the government and persons interested in the sector was that absorption of cost over runs by the PPP developer was a key efficiency gain of PPP projects. However, in subsequent years, the private sector has demonstrated a significant aversion to this risk, which is getting assigned to (or shared with) the project authority. The instant study examines this aspect from the context of balanced allocation of risks, which is a cornerstone of an efficient public private partnership.

1.4.3 Another research conducted on the subject at Indian Institute of Public Administration in the recent past has been by Ajmer Singh (2013-14) which analyses the 'Impact of Private Investment in Growth of National Highways'. The study examined national highways awarded by NHAI till December 2013 and concludes that average time over run for Cash Contracts (221 completed projects) and BoT (Toll) projects (53

experience. The studies discussed above have not attempted to study the extent of penetration of PPPs as a mode of implementation of projects across various States in the country or assessed impact of slowdown of the economy and other causes on PPP projects at the State level. The instant study aims to widen the examination of PPPs by studying different projects across States and sectors to assess the factors that resulted in scaling up of the PPP programme in the country and the determinants that caused wide spread stress in the PPP projects since 2012-13.

1.4.18 A valuable resource on the Indian experience is the study carried out by the Kelkar Committee on Revisiting and Revitalising PPP model of Infrastructure (2015). However, the report is more than a study – it is a critical policy direction which the government is implementing. Hence, the report is discussed in later parts of the instant research.

1.5. Objectives

1.5.1 The study attempts the following and suggests policy measures thereon:

i. Study implementation of PPP projects in infrastructure sectors in India since 2006 to determine indicators for effective implementation of PPP projects.

ii. Examine Central sector PPP projects and central sector-supported PPP projects which have been cancelled or renegotiated during the past five years and identify their underlying causes and patterns across sectors.

iii. Assess risk matrix of various models of delivery of projects in the highways sector.

1.6. Research Design

1.6.1 The research design consists of the following:

i. Descriptive analysis of implementation of PPP projects (subject to available data).

ii. Exploratory research of projects that have encountered renegotiation/ cancellation.

iii. Qualitative assessment of the risk matrix of various modes of highway project implementation.

1.7. Research Questions

1.7.1 The following research questions are studied in the instant research:

i. What are the indicators which result in effective implementation of PPP projects in infrastructure sectors in India?

ii. What have been the causes for cancellation or renegotiation of Central sector PPP projects during the past five years?

iii. How is risk distributed in various models of delivery of projects in the highways sector?

1.8. Research Methods and Data Sources

1.8.1 The analysis is based on secondary data through study of databases and websites of Government of India (GoI), the World Bank on infrastructure and PPP projects and Public Private Infrastructure Advisory Facility (PPIAF). Review of various reports and documents on the subject will be studied such as reports by Departments/agencies of GoI (such as Department of Economic Affairs, Planning Commission/NITI Aayog, NHAI, Department of Shipping, etc) as well as reports and assessment of Indian infrastructure by private sector entities and think tanks.

1.8.2 Discussions with officers of National Highways Authority of India, Ministries/Departments of Government of India and private sector entities was carried out to assess the factual position.

1.9. Limitations

1.9.1 The terms infrastructure and Public Private Partnerships are defined differently by various countries and entities.

1.9.2 Within India, the definition of Infrastructure varies between Ministries and Organizations such as Ministry of Finance, Ministry of Statistics and Programme Implementation (for estimations by Central Statistical Organisation for national income purposes), Planning Commission/NITI Aayog for plan estimates on Investments in Infrastructure, Reserve Bank

of India (priority sector lending norms for infrastructure), etc. There are different definitions even within Ministry of Finance, i.e. Department of Revenue (for purposes of fiscal incentives) and Department of Economic Affairs. DEA operates on varying definitions between Infrastructure Division (for various schemes facilitating PPPs) and Economic Division (for the estimates used in the Annual Economic Survey).

1.9.3 For the purpose of this study, the focus is primarily on the definition of Infrastructure as adopted for Five Year Plans, i.e. physical infrastructure consisting of power sector, roads, telecom, railways (including urban rail) ports, etc. This enables comparison over time, and also allows examination of various documents on the matter by private entities and other think tanks.

1.9.4 Similarly, Public Private Partnerships have been defined differently by various entities and consist of a wide variety of models, depending on extent of ownership and control of private sector. The spectrum ranges from Public Ownership to complete Divestiture and Privatisation of assets - and various combinations in between. However, for the purpose of detailed study, Build Operate and Own (BOO) models, where ownership transfers to private sector operator and divestitures are not included in the scope of this study. Hence, power and telecom sector projects of India, which are part of the private sector database are not studied in detail for assessment of issues being faced and the way ahead.

1.10. Chapterisation Scheme

1.10.1 The study is presented in seven chapters. *Chapter 1* introduces the subject and explores the contours of the issues effecting infrastructure sector, particularly public private partnerships. *Chapter 2* studies and documents the journey of PPPs in India, particularly the 'why' and 'how' PPPs came to be viewed as an efficient mechanism for delivery of infrastructure services in India. *Chapter 3* looks at the same aspect from the back end, viz., the enabling environment that was created in the country which made India's PPP programme globally acknowledged for its spread, successes and future potential. *Chapter 4* studies the risks that materialized and brought focus on the vulnerabilities within the PPP eco system in the country and resulted in putting in place changes, catalyzed by the Kelkar Committee recommendations. *Chapter 5* examines the response to the risks that materialized, specifically the response in the roads sector, which was the first to experiment with new models to assuage the ambivalent outlook of the private developers, financiers and users. This examination of models of PPPs in the highway sector is from the prism of the basic paradigm of an efficient PPP, viz., whether the allocation of risk is to the party most suitable to bear the risk. *Chapter 6* distils the learnings from the issues examined in the earlier chapters to identify the indicators and conditions which determine the success (or failure) of a PPP project. An attempt is also made to look at case studies of PPP projects from a few sectors to identify the

effectiveness indicators. Finally, *Chapter 7* attempts to suggest a policy recommendation for the way ahead.