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Kumar V. Pratap · Rajesh Chakrabarti

Public-Private Partnerships in Infrastructure

Managing the Challenges

 Springer

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Foreword

India is the second most popular market for Public–Private Partnerships (PPP) in the developing world as per the Private Participation in Infrastructure database of the World Bank. However, given the infrastructure deficit in the country, PPPs need to be scaled up across sectors and geographies. In this environment, this book that starts with infrastructure challenges, talks about options for infrastructure financing, and discusses the transaction structure, is timely and should prove useful to the uninitiated as well as professionals to enter into such partnerships. This book should be especially useful to students who need to understand the nitty-gritties of the PPP transaction process. The many case studies in the book emphasize its real-life flavor, which should enhance understanding of the complex subject.

However, not everything is sanguine about PPPs. Owing to the resource crunch faced by countries, they have invited the private sector for provisioning of infrastructure. Increasingly infrastructure projects are being renegotiated squandering the gains from private participation in infrastructure. This trend is catching up across the world, including India.

My own research for Latin America and Caribbean region shows that infrastructure contracts are becoming more fragile with time: incidence of renegotiations for the region has increased from 30% to 68% between 1985–2000 and 1988–2010; time to renegotiate has decreased from 2.2 years to 1 year from start of commercial operations; and the sectors most vulnerable to renegotiations are transport and water and sewerage where the incidence has increased to 78% and 87% respectively, making renegotiations the rule rather than the exception.

Renegotiation of infrastructure projects for reasons other than incompleteness of contracts or poorly designed contracts are bad in principle and practice. The Government of India and the infrastructure regulatory agencies would be well advised to make renegotiations not a matter of routine but exceptionally difficult. There exist many mechanisms to accomplish this, like asking the private party to pay a fee linked to the total project cost for applying to the public authority for renegotiations, which would be forfeited in case the renegotiation request is rejected; requiring a hefty performance bond in the form of bank guarantee; declaring and acting upon the pledge that the public authority would not entertain

a renegotiation request within the first 5 years of commercial operations of the project, etc. All these measures would deter opportunistic bids and preserve their sanctity.

While India is doing well in terms of the stock of PPP projects, there are sectors such as water and sewerage where there is immense scope of private participation, but with a realistic dose of caution. Water is under-priced in India, like in the rest of the world, and any effort to bring in private players would have to be accompanied by an increase in water retail tariffs, which makes the effort politically sensitive. However, there exist examples across the world (Manila Water Company, to name one) where tariff increase has come with much better service delivery, making the initiative politically palatable. India would be well advised to follow such examples to augment infrastructure services at a rapid pace and maintain its position as the fastest growing large economy in the world.

I commend the authors for a balanced and comprehensive exposition of the various facets of infrastructure PPPs and hope the book finds a wide readership.

Washington DC

Prof. J. Luis Guasch
Professor of Economics at University of California
San Diego
Formerly Head of the Global Expert Team on Privatization
The World Bank

Preface

This book is an attempt to better understand the broad realities and challenges of managing infrastructure Public–Private Partnerships (PPP) in developing countries with a special focus on India. It is meant to be a text for the students of infrastructure and PPP design, as well as an operating manual for the practicing manager or government official in charge of making such large and expensive projects work out right. Consequently, our attempt here has primarily been to focus on the key decisions and design aspects of these projects as identified in the literature and the recent global PPP experience. However, we also discuss the context and the broad historical and economic principles of PPPs here, since a failure to understand these principles would limit the readers’ understanding of the challenges.

The central questions that the volume seeks to shed light on include: what is a PPP and why is it gaining popularity? What broad needs does it fulfill for its many stakeholders? What are the different ways of structuring and financing PPPs and with what implications? What are the observed flashpoints of conflicts that arise in PPPs? How can better design of PPP contracts avoid such problems and help resolve them? What roles do regulatory structures play in helping PPPs? What are the implications of renegotiating PPPs?

Our broad approach in writing this book has been to move away from abstract theoretical discussion of these issues to elucidate the always complicated issues involved with case studies and in-depth examples. We have, therefore, included several case studies from India as well as many other developing countries to bring out the nuances of contract design and enforcement, the clash of private and public objectives, and the time inconsistencies and incomplete contracting issues that frequently crop up in large scale infrastructure PPP projects.

Apart from helping PPP students and practitioners in their jobs, we also hope to stimulate research interest in contemporary PPP reality in India and other emerging markets. We recognize that the field of infrastructure PPPs is an evolving one. There is no last word here and new knowledge is being created every day around the world as innovations are tried out in contracting, financing, structuring and (re)negotiating contracts, and the experiences recorded. Also the multidimensional nature of the issues involved—the shifting politico-economic environment, the

technical issues, the sometimes unanticipated environmental challenges—leave room for reinterpretation of events in the recent past as well. Our attempt here, therefore, is to capture, organize, and present the reality of PPPs as we understand them now to help practitioners to learn from experience and avoid the errors of the past in engineering future partnerships. But this is only a step in the never-ending journey of seeking knowledge.

The extent to which this volume encourages further research in infrastructure PPPs and informs the PPP practitioner—in governments, private sector, transnational organizations, or any other stakeholder—in making better decisions would, therefore, be the litmus test of the value of our efforts.

New Delhi, India

Kumar V. Pratap
Rajesh Chakrabarti

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Several people contributed in myriad ways to the long project that finally culminated in the present volume. We apologize in advance to those whom we would doubtless fail to mention despite our best efforts.

We, particularly Dr. Pratap, owe a massive debt of gratitude to Prof. N.R. Prabhala of the University of Maryland, Clive Harris of the World Bank, Carol Graham of the Brookings Institution, Mark Hugo Lopez of the Pew Research Center, Gajendra Haldea and Ravi Mital of the Planning Commission, and Madhusudan Prasad of the Ministry of Urban Development, who helped form and organize our thoughts on the subject. Our association with the Indian School of Business (ISB), Mohali and Hyderabad has also helped coalesce the material into its present shape. We would like to thank ISB and the Bharti Institute of Public Policy for the opportunity. We would also like to thank the five batches of students at ISB for the questions and discussion that have helped us make our arguments more robust. We also learnt a huge amount from our discussions with Prof. Richard Neufville of MIT.

We would like to particularly thank Prof. V. Raghunathan of Varalakshmi Foundation as well as the GMR top management for the support and access that they provided to us in writing the case study on the Indira Gandhi International Airport at Delhi. Mandar Kagade and Aadhaar Verma at the Bharti Institute provided great help in creating the initial draft of the case study.

Sagarika Ghosh and Nupoor Singh of Springer shepherded the project in the most encouraging manner. Praveen Kumar and other Springer team members provided great support without which this project would never have been completed.

The OP Jindal Global University has been the academic home of Prof. Chakrabarti for much of this project. Special thanks to the Vice Chancellor, Prof. Raj Kumar and the Dean, Jindal Global Business School, Prof. Tapan Panda for their support.

We alone remain responsible for the errors and shortcomings that we are sure have crept into and remained in the book despite our best efforts. We can only appeal to the readers' indulgence and kind feedback here.

Kumar V. Pratap
Rajesh Chakrabarti

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¹Views are personal and may not correspond with the views of the organizations with which the authors are affiliated.

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Abbreviations

| | |
|-------|--|
| AAI | Airports Authority of India |
| AC | Average Cost |
| ACS | Average Cost of Supply |
| AERA | Airports Economic Regulatory Authority |
| ALM | Asset-Liability Mismatch |
| AMI | Advanced Metering Infrastructure |
| AMSS | Amarchand & Mangaldas & Suresh Shroff & Co |
| AP | Andhra Pradesh |
| APTEL | Appellate Tribunal for Electricity |
| ARR | Aggregate Revenue Requirement |
| AT | Average Tariff |
| AT&C | Aggregate Technical and Commercial Losses |
| BGT | Biwater Gauff (Tanzania) Limited |
| BHEL | Bharat Heavy Electricals Limited |
| BOO | Build–Own–Operate |
| BOOT | Build–Own–Operate–Transfer |
| BOT | Build–Operate–Transfer |
| BRICS | Brazil, Russia, India, China, South Africa |
| BRPL | BSES Rajdhani Power Limited |
| BSNL | Bharat Sanchar Nigam Limited |
| BTC | Baku–Tbilisi–Ceyhan |
| BYPL | BSES Yamuna Power Limited |
| CA | Concession Agreement |
| CAG | Comptroller and Auditor General of India |
| CCGT | Combined Cycle Gas Turbine |
| CCI | Cabinet Committee on Infrastructure |
| CDPQ | Caisse de depot et placement du Quebec |
| CERC | Central Electricity Regulatory Commission |
| CESCO | Central Electricity Supply Company of Orissa |
| CGPL | Coastal Gujarat Power Limited |

| | |
|------------|---|
| CIL | Coal India Limited |
| COD | Commercial Operation Date |
| CoS | Committee of Secretaries |
| CPI (UNME) | Consumer Price Index for Urban Non-Manual Employees |
| CPPIB | Canada Pension Plan Investment Board |
| CRR | Cash Reserve Ratio |
| CSA | Coal Supply Agreement |
| CSO | Civil Society Organization |
| CWS | City Water Services Ltd |
| DAME | Delhi Airport Metro Express |
| DAMEPL | Delhi Airport Metro Express Private Limited |
| DAWASA | Dar-es-Salaam Water and Sewerage Authority |
| DAWASCO | Dar-es-Salaam Water and Sewerage Corporation |
| DBFOT | Design–Build–Finance–Operate–Transfer |
| DERC | Delhi Electricity Regulatory Commission |
| DESU | Delhi Electricity Supply Undertaking |
| DF | Development Fee |
| DIAL | Delhi International Airport Limited |
| DMRC | Delhi Metro Rail Corporation |
| DPC | Dabhol Power Company |
| DPR | Detailed Project Report |
| DVB | Delhi Vidyut Board |
| EAP | East Asia and Pacific |
| EBIT | Earnings before Interest and Taxes |
| EC | Evaluation Committee |
| ECB | External Commercial Borrowings |
| EGoM | Empowered Group of Ministers |
| EMIO | Emerging Market Investors and Operators |
| EMP | Enhanced Monitoring Period |
| EP | Equator Principles |
| EPC | Engineering, Procurement and Construction |
| EWURA | Energy and Water Utilities Regulatory Authority |
| FARAC | Fideicomiso de Apoyo al Rescate de Autopistas Concesionadas |
| FC | Financial Consultant |
| FDI | Foreign Direct Investment |
| FII | Foreign Institutional Investment |
| FRBM | Fiscal Responsibility and Budget Management |
| GCF | Gross Capital Formation |
| GCR | Global Competitiveness Report |
| GDP | Gross Domestic Product |
| GDR | Global Depository Receipt |
| GETE | Group of Eminent Technical Experts |
| GNPA | Gross Non-Performing Assets |
| GoI | Government of India |
| GoM | Group of Ministers |

| | |
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| GoT | Government of Tanzania |
| GRC | Government Review Committee |
| GTA | Global Technical Adviser |
| HAM | Hybrid Annuity Model |
| HOT | High Occupancy Toll |
| HPEC | High-Powered Expert Committee |
| HSR | High-Speed Rail |
| ICR | Interest Coverage Ratio |
| ICSID | International Centre for Settlement of Investment Disputes |
| IDF | Infrastructure Debt Funds |
| IDP | Initial Development Plan |
| IE | Independent Engineer |
| IFC | International Finance Corporation |
| IGIA | Indira Gandhi International Airport |
| IIFCL | India Infrastructure Finance Company Limited |
| IMG | Inter-Ministerial Group |
| INFRA | Infrastructure Recovery and Assets |
| IOC | Indian Oil Corporation |
| IPO | Initial Public Offer |
| IRDA | Insurance Regulatory and Development Authority |
| IRFC | Indian Railway Finance Corporation |
| IRSDC | Indian Railway Station Development Corporation |
| JICA | Japan International Cooperation Agency |
| JNNURM | Jawaharlal Nehru National Urban Renewal Mission |
| JV | Joint Venture |
| JVC | Joint Venture Company |
| kWh | Kilowatt hour |
| L&T IDPL | L&T Infrastructure Development Projects Limited |
| LAA | Land Acquisition Act, 1894 |
| LAC | Latin America and Caribbean |
| LC | Legal Consultant |
| LD | Lease Deed |
| LNG | Liquefied Natural Gas |
| MA HSR | Mumbai–Ahmedabad High-Speed Rail |
| MC | Marginal Cost |
| MCA | Model Concession Agreement |
| MCP | Mandatory Capital Project |
| MERC | Maharashtra Electricity Regulatory Commission |
| MES | Military Engineering Services |
| MMPA | Million Metric Tonnes Per Annum |
| MoCA | Ministry of Civil Aviation |
| MoEF | Ministry of Environment and Forests |
| MoF | Ministry of Finance |
| MoU | Memorandum of Understanding |
| MR | Marginal Revenue |

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| MSEB | Maharashtra State Electricity Board |
| MSEDCL | Maharashtra State Electricity Distribution Company Limited |
| MSS | Mahan Sangharsh Samiti |
| MSW | Municipal Solid Waste |
| MTNL | Mahanagar Telephone Nigam Limited |
| MYT(O) | Multi-Year Tariff (Order) |
| NAFTA | North American Free Trade Agreement |
| NBFC | Non-Banking Finance Company |
| NDA | National Democratic Alliance |
| NDMC | New Delhi Municipal Council |
| NDPL | North Delhi Power Limited |
| NDTL | Net Demand and Time Liabilities |
| NGO | Non-Governmental Organization |
| NHAI | National Highways Authority of India |
| NHDP | National Highways Development Project |
| NOIDA | New Okhla Industrial Development Authority |
| NPA | Non-Performing Assets |
| NPC | Net Present Cost |
| NRHM | National Rural Health Mission |
| NRW | Non-Revenue Water |
| NTBCL | Noida Toll Bridge Company Limited |
| NTDPC | National Transport Development Policy Committee |
| NUWA | National Urban Water Authority |
| O&M | Operation and Maintenance |
| ODA | Official Development Assistance |
| OECD | Organization for Economic Cooperation and Development |
| OMDA | Operation, Management and Development Agreement |
| OPIC | Overseas Private Investment Corporation |
| P | Price |
| PAP | Project Affected Persons |
| PC | Planning Commission |
| PCEL | Pink City Expressway Private Limited |
| PE | Private Equity |
| PFC | Power Finance Corporation |
| PFI | Private Finance Initiative |
| PGCIL | Power Grid Corporation of India Limited |
| PLF | Plant Load Factor |
| POG | Procurement of Goods (Contract) |
| PPA | Power Purchase Agreement |
| PPI | Private Participation in Infrastructure |
| PPP | Public-Private Partnership |
| PSC | Public Sector Comparator |
| PSL | Priority Sector Lending |
| PSP | Private Sector Participation |
| PSU | Public Sector Undertaking |

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| PV | Present Value |
| PwC | Price Waterhouse Coopers |
| QCBS | Quality-cum-Cost Based System |
| R&R | Rehabilitation and Resettlement |
| RAM | Rational Actor Model |
| RBI | Reserve Bank of India |
| REC | Rural Electrification Corporation |
| RFCTLARR | Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement (Act, 2013) |
| RfP | Request for Proposal |
| RfQ | Request for Qualification |
| RGPP | Ratnagiri Gas and Power Private Limited |
| RIL | Reliance Industries Limited |
| RLNG | Regasified Liquefied Natural Gas |
| RoFR | Right of First Refusal |
| ROT | Rehabilitate–Operate–Transfer |
| SAR | South Asia Region |
| SBD | Standard Bidding Documents |
| SBI | State Bank of India |
| SCM | Smart City Mission |
| SEB | State Electricity Board |
| SERC | State Electricity Regulatory Commission |
| SHA | Shareholders Agreement |
| SIPE | Supply and Installation of Plant and Equipment (Contract) |
| SLR | Statutory Liquidity Ratio |
| SoE | State-owned Enterprise |
| SPV | Special Purpose Vehicle |
| SSA | State Support Agreement |
| SSA | Sub-Saharan Africa |
| STM | Super Doll Trailer Manufacture Co. (T) Limited |
| SWM | Solid Waste Management |
| T&D | Transmission and Distribution |
| TAMP | Tariff Authority for Major Ports |
| TAPI | Turkmenistan–Afghanistan–Pakistan–India |
| THSRC | Taiwan High-Speed Rail Corporation |
| TINA | There Is No Alternative |
| ToD | Time-of-Day (tariff) |
| TPC | Total Project Cost |
| TPDDL | Tata Power Delhi Distribution Limited |
| TRAI | Telecom Regulatory Authority of India |
| UDAY | Ujwal Discom Assurance Yojana |
| ULB | Urban Local Body |
| UMPP | Ultra Mega Power Project |
| UNCITRAL | United Nations Commission on International Trade Law |
| UPA | United Progressive Alliance |

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| USD | United States Dollar |
| VDOT | Virginia Department of Transportation |
| VfM | Value for Money |
| VGf | Viability Gap Funding |

Prologue: The Delhi Noida Toll Bridge

Since its opening to traffic in February 2001, the Delhi Noida Toll Bridge across the River Yamuna has vastly improved the quality of commute and hence life itself for millions in India's capital. It was one of the first major Public-Private Partnership (PPP) projects in the country, and with its majestic eight-lane span, cloverleaf interchange, and modern approach road system on the Noida side as well as its connect to the Ashram flyover on the Delhi side, the 6-km-long bridge pretty much introduced modern planned road system structure in the country.

Many would argue that the bridge contributed much more to India than just the resulting ease of transport. As one of the very first PPP projects in the country, it literally provided concrete proof of the concept in the nation that would soon catapult to hosting the second highest number of PPP projects in the developing world. It provided functioning evidence that private capital could be effectively harnessed to provide public services. And with a series of firsts to its credit, it had opened multiple doors across sectors.

The construction of the mammoth structure was completed in 25 months, 4 months ahead of schedule. This was almost an unheard of accomplishment in the Indian setting, where time overruns in creating public infrastructure is a generally assumed feature. It was also completed within its budget of approximately Rs. 4.08 billion. More than anything else, it underlined the efficiencies of private project management, the mainstay of the PPP argument.

The project broke new ground in India's still fledgling capital markets by making an Initial Public Offer (IPO) of Deep Discount Bonds, first by any green-field infrastructure company. Its ability to raise funds from the market again proved the viability of the model on the financing side. It succeeded in raising money abroad as well through a Global Depository Receipt (GDR) issue. It was the first private infrastructure project to be listed on a stock exchange.

But this is only part of the story. In 2007, India's erstwhile Planning Commission, the key backer of infrastructure PPPs in the country, released a review with a scathing criticism of the manner in which the Toll Bridge was contracted and what that has implied for the exchequer.

The saga of the Delhi Noida Toll Bridge is both long and instructive. In April 1992, the government of Delhi, UP's New Okhla Industrial Development Authority (NOIDA), and the private sector infrastructure financing entity, IL&FS had signed a Memorandum of Understanding (MoU) to create the Toll Bridge. IL&FS created a subsidiary, Noida Toll Bridge Company Limited (NTBCL) exactly 4 years later in April 1996. The Concession Agreement (CA), or the contract defining the project, got signed another year and a half later, in November 1997. It granted the NTBCL the right to Build, Own, Operate, and Transfer (BOOT) the Toll Bridge for 30 years, extendable if certain conditions were not met. NTBCL was entitled to charge tolls to passing vehicles, the quantum of which would be revised periodically in step with inflation by a committee with representatives of all major stakeholders. Importantly, NTBCL will receive an assured post-tax return of 20% on the entire capital employed—project cost, repair costs, and the shortfall from the assured return in the previous year. NOIDA could give IL&FS Land Development Rights to make up for the shortfall in assured returns. Two months later, the governments of Delhi and UP signed “support agreements” to facilitate construction of the bridge and approach roads, respectively. By December 1998, Intertoll Services Management BV of Netherlands, subsidiary of an eponymous South African company, was brought in as the maintenance partner. Construction started within a few months.

Upon inauguration in 2001, however, the commercial reality did not live up to the projections. The expected traffic growth, particularly of the commercial traffic, did not take place, and the project continued to make losses for the next 5 years adding up to over Rs. 1.20 billion. Within a year of start of the operations, the company approached the institutional lenders and obtained a debt restructuring and succeeded in obtaining judicial approval in 2005 to alter the terms of its Deep Discount Bonds. The debt restructuring also triggered use of the land development rights granted under the CA. The cumulative shortfall of the assured 20% return meant an extension of the life of the concession well beyond the 30 years.

The disappointing financial performance and the fiscal burden it imposed on the public partners prompted a relook at the Concession Agreement itself. The 2007 Planning Commission review strongly criticized it for being biased to the private partners. Among other things, it argued that the central clause of 20% assured return to the project on capital employed was at the core of many of the problems since (i) without any cap on project cost it incentivized overinvestment; (ii) the interest rates being in the 12–16% range and the project being heavily leveraged, as is typical of project-financed infrastructure, it provided an unjustifiably high rate of virtually risk-free return on equity in excess of 30%; (iii) the inclusion of the shortfall of assured return in the capital employed, the base of the assured return, transferred the entire risk to the public partner with no incentive for the private partner to improve financial performance. It also pointed out several provisions that gave the project sponsor undue influence in setting terms in its own favor. One of its strongest objection was that the project award mechanism used a single-party negotiated contract rather than a public tender to private partners which would have allowed competitive forces to reduce the burden on the public sector.

A 2012 review of the project by one of the authors found that the total project cost would increase to over Rs. 830 billion (over 200 times the original project cost) by the end of the original contract period in 2031 on current traffic trends. In addition, since the project would never make as much money as guaranteed by the CA, it would last till perpetuity.

In October 2016, the Allahabad High Court, citing several reasons, including compromising public interest,² directed that, henceforth, the Concessionaire, Noida Toll Bridge Company, shall not impose or recover any user fee/toll from the commuters for using the Delhi Noida Toll Bridge.

With the Delhi Noida Toll Bridge, India had entered the era of infrastructure PPPs. It epitomized the PPP experience, both in its success in terms of swiftly delivering a swanky, well-maintained twenty-first century public asset, and its challenges and controversies, including over-optimistic (in hindsight) growth projections and acrimony over a flawed concession agreement. The sector and the country would have to learn to resolve these challenges and craft projects more efficiently over the years to come. For, despite all its challenges and roadblocks, infrastructure PPPs are here to stay.

²The Allahabad High Court judgment dated 26.10.2016 says “The action of NOIDA in awarding the Concession Agreement dated 10.11.1997 in favour of NOIDA Toll Bridge Company i.e. the Concessionaire fails to satisfy the test of reasonableness and public interest”.