

INDIA INFRASTRUCTURE REPORT 2008

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Business Models of the Future

3iNetwork

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FOREWORD

The notion that only the government can and should provide all public infrastructure service has been gradually abandoned in India over the course of the past decade. With private sector participation—in telecoms, roads, ports, civil aviation, and airports—leading to visible improvements in service quality, time, and cost there is growing acknowledgement of the benefits that the private sector brings to the infrastructure sector. In its Eleventh Five Year Plan the Government hopes to harness the private sector's efficiencies in delivery of infrastructure projects to a much greater extent in meeting India's infrastructure needs, either through fully private ventures or through public private partnerships (PPP).

The *India Infrastructure Report 2008* theme is aptly 'Business Models of the Future'. The report considers various models of PPP and covers issues in their design. It also explores different forms of partnerships between government, NGOs, private sector, and users in the delivery of infrastructure services.

What is exciting is that new vistas are opening up. There is a range of models that can be used to extend services in a sustainable manner for rural and social infrastructure. Minimum subsidy bidding, franchises, and the use of vouchers are just some of the means by which the private sector can be profitably and competitively involved and more users provided with access and choice. Surveys have shown that the poor are willing to pay for quality public services. At present, they often end up

paying more than the rich for access to basic services that are sub-standard. The report presents scalable case studies of quality service provision at low cost, suited to meet the needs of the poor in areas such as drinking water, primary health care, and education. Indeed, there is a real opportunity for business to innovate and play a constructive role in inclusive growth by providing services adapted for the 'bottom of the pyramid'.

The attention to vocational training in the report is pertinent because India is facing constraints of trained manpower in almost all sectors. Provision of quality education—elementary and secondary—to our young population remains a challenge that can be effectively addressed through PPP endeavors. I am pleased to note that the current report has come up with some innovative models to deliver these in the country.

I would like to congratulate all the contributors who, under the aegis of the 3iNetwork, have produced this report. Coming as it does at the launch of the Eleventh Five Year Plan there should be significant interest in the various means by which the private sector can participate in infrastructure development. Moreover, I hope that it will stimulate further ideas and, importantly, take forward initiatives in extending infrastructure services to those who do not have access to such services.

RAJIV B. LALL
April 2008

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To fulfil India's aspirations to generate significant increases in infrastructure spending in the years to come, it will have to rely heavily on private investors as opposed to earlier policies of state-run agencies building roads, airports, and power projects. The government has been keen to involve the private sector in the delivery of infrastructure but it is complicated for the private sector to work out service standards while maintaining social responsibility and keeping the enterprise financially viable.

Failure to devise financially viable models for rural roads, power plants, or mass transit systems in the last fifteen years can be attributed to the opacity of public-private transactions related to the infrastructure sector. This report provides a short tour of various models which can be used in infrastructure and social sectors by gaining a better understanding of the social requirements of infrastructure, the government's public obligations to provide infrastructure services and the private sector's need to maintain financial viability.

Almost all the contributors of the report have presented PPP models or model-ideas from their experience in the infrastructure sector at various levels of government. The two workshops organized at IIT, Kanpur helped in assimilating the experiences of both the contributors as well as the other participants. We would like to thank Partha Mukhopadhyay, Neeraj Gupta, Sri Kumar Tadimalla, Runa Sarkar, Rajiv Shekhar, P.V. Indiresan, Apoorva Oza, Monish Verma, Vivek Agarwal, V. Ranganathan, G. Raghuram, Pradeep Verma, Sanjukta Ray, Ravikant Joshi, Devendra Kumar Jha, Saugata Bhattacharya, Bhaskar Chakrabarti, Ramakrishna Nallathiga, Ashoke Bhattacharjya, Chetan Vaidya, Neeraj Sharma, Shailesh Pathak, Prabhat K. Sinha, Avinash Kumar Agarwal, Sunil Kumar, Ajay Saxena, Anand Srivastava, Anoop Singh, and Y.N. Singh who participated in the

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We are grateful to all the authors who, despite their busy schedule, participated in the workshops and maintained timelines of the many drafts their write-ups had to go through. We would like to be excused for troubling them with reminders and follow ups for which we used every means of communication at our disposal.

We would like to acknowledge the professional services rendered by Lucid Solutions, the editorial consultancy firm owned and managed by Shreemoyee Patra. Each paper was reviewed, revised, and restructured to fully align it with the tone, purpose, and presentation of the report. Shreemoyee helped in transforming the more technical writings into accessible prose for dispersion among a wider audience.

We received immense support from Devika Fernandes and Mamta Samant in our extensive library searches and endeavours to trace specific project information which was generally not available. Venkatraman K.V. once again provided help in drawing high resolution diagrams and graphs and answering all the last minute queries from the publishers.

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ANUPAM RASTOGI
PREM KALRA
AJAY PANDEY

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ABBREVIATIONS

| | | | |
|---------|--|---------|---|
| ACA | Additional Central Assistance | CIDCO | City and Industrial Development Corporation |
| AERA | Airport Economic Regulatory Authority | CMTS | Cellular Mobile Telephone Service |
| AgDSM | Agricultural Demand Side Management | Concor | Container Corporation of India |
| ANM | Auxiliary Nurse Midwife | CPP | Captive Power Producer |
| APDRP | Accelerated Power Development and Reform Programme | CREMA | <i>contrato de recuperacion y mantenimiento</i> |
| ARWSP | Accelerated Rural Water Supply Programme | CRF | Central Roads Fund |
| AT&C | Aggregate Transmission and Commercial (losses) | CST | Central Sales Tax |
| AUSM | Adaptive user selection mechanism | CUF | Capacity Utilization Factor |
| BCU | Bus Control Unit | CURE | Common Urban Reform Elements |
| BEE | Bureau of Energy Efficiency | DBFO | Design Build Finance and Operate |
| BG | Broad Gauge | DERC | Delhi Electricity Regulatory Commission |
| Bhavini | Bharatiya Nabhikiya Vidyut Nigam | DFCCIL | Dedicated Freight Corridor Corporation of India Ltd |
| BOA | Board of Approvals | DIF | Dedicated Infrastructure Funds |
| BOI | Board of Investment | DGCA | Directorate General of Civil Aviation |
| BOMT | Build Operate Manage and Transfer | DLR | Dockland Light Railways |
| BOOT | Build Own Operate Transfer | DMIC | Delhi–Mumbai Industrial Corridor |
| BRTS | Bus Rapid Transit System | DMRC | Delhi Metro Rail Corporation |
| BSO | Basic Services Operators | DoT | Department of Telecom |
| BSUP | Basic Services for the Urban Poor | DPR | Detailed Project Report |
| BWSL | Bandra-Worli Sea Link | dwt | deadweight tonnage |
| CA | Concessioning Authority | DWWTP | Delfland Waste Water Treatment Project |
| CAL | Computer Aided Learning | EASF | Essential Air Services Fund |
| CCEA | Cabinet Committee of Economic Affairs | EMBG | Earnest Money Bank Guarantee |
| CDF | Community Development Fund | EOI | Expression of Interest |
| CDP | City Development Plan | EOL | Engine on Load |
| CERC | Central Electricity Regulatory Commission | EPC | Engineering, Procurement and Construction |
| CFLS | Community Forest Link Study | EPZ | Export Processing Zone |
| CFS | Container Freight Stations | ERC | Electricity Regulatory Commission |
| CHI | Community health insurance | EASF | Essential Air Services Fund |
| ChPT | Chennai Port Trust | EURIBOR | European Inter Bank Lending Rate |

| | | | |
|--------|---|-------------|---|
| FCC | Federal Communications Commission | MRTS | Mass Rapid Transit System |
| FERC | Federal Energy Regulatory Commission | MRVC | Mumbai Rail Vikas Corporation |
| FEZ | Free Economic Zones | MSB | Minimum Subsidy Bidding |
| FOIS | Freight Operations Information System | MSRDC | Maharashtra State Road Development Corporation |
| FTIL | Financial Technologies (India) Ltd | MTHL | Mumbai Trans Harbour Link |
| FTZ | Free Trade Zones | MUTP | Mumbai Urban Transport Project |
| GHIAL | GMR Hyderabad International Airport | NCDEL | National Commodities and Derivatives Exchange Ltd |
| GoAP | Government of Andhra Pradesh | NCVQ | National Certificate of Vocational Qualification |
| GoM | Group of Ministers | NDNC | National 'do not call' (registry) |
| GQ | Golden Quadrilateral | NEC | North Eastern Council |
| GVS | Gram Vikas Samiti | Neptune RTS | Neptune Regional Transmission System |
| GW | Groundwater | NHAI | National Highways Authority of India |
| HDPE | High Density Poly-ethylene | NHDP | National Highways Development Programme |
| HSPA | High Speed Packet Access | NHPC | National Hydroelectric Power Corporation |
| IAEA | International Atomic Energy Agency | NISG | National Institute for Smart Government |
| ICD | Inland Container Depot | NMMC | New Mangalore Municipal Corporation |
| ICT | Information and Communication Technology | NMPT | New Mangalore Port Trust |
| ICTSL | Indore City Transport Services Ltd. | NMSEZ | Navi Mumbai Special Economic Zone |
| IEEL | Indian Energy Exchange Ltd | NMV | Non-motorized Vehicle |
| IIP | Index of Industrial Production | NPCIL | Nuclear Power Corporation of India Ltd |
| IPP | Independent Power Producers | NPV | Net Present Value |
| IPs-I | Infrastructure Providers Category I | NRRDA | National Rural Road Development Agency |
| IPTV | Internet Protocol Television | NSG | Nuclear Suppliers Group |
| IRR | Internal Rate of Return | NTFP | Non-timber Forest Products |
| ISP | Independent Service Providers | O&M | Operations and Maintenance |
| ITC | Industrial Training Centre | OD | Origin-Destination |
| ITI | Industrial Training Institute | ODF village | Open Defecation Free village |
| JBIC | Japan Bank for International Cooperation | OLBTS | On Line Bus Tracking System |
| JICA | Japanese Investment Cooperation Agency | PCS | Personal Communication Services |
| JNNURM | Jawaharlal Nehru National Urban Renewal Mission | PFC | Power Finance Corporation |
| JNPT | Jawaharlal Nehru Port Trust | PFI | Private Finance Initiative |
| JREDA | Jharkhand Renewable Energy Development Agency | PGCIL | Powergrid Corporation of India Ltd |
| LRGP | Large Revenue Generating Projects | PHI | Private health insurance |
| MbPT | Mumbai Port Trust | PLF | Plant Load Factor |
| MCA | Model Concessions Agreement | PMGSY | Pradhan Mantri Gram Sadak Yojana |
| MCX | Multi Commodity Exchange | PMSSY | Pradhan Mantri Swasthya Suraksha Yojna |
| MIAL | Mumbai International Airport Ltd | POL | Petroleum, Oil and Lubricants |
| MMRDA | Mumbai Metropolitan Region Development Authority | PPA | Power Purchase Agreements |
| MMSEZ | Maha Mumbai Special Economic Zone | PPP | Public Private Partnership |
| MMTS | Multi-modal Transport System | PPPAC | Public Private Partnership Appraisal Committee |
| MNC | Multinational company | PQB | Pre-qualified Bidders |
| MNRE | Ministry of New and Renewable Energy | PRI | Panchayati Raj Institution |
| MOU | Minutes of Usage | PSRF | Power Sector Reform Fund |
| MoUD | Ministry of Urban Development | | |
| MOUEPA | Ministry of Urban Environment and Poverty Alleviation | | |

xx Abbreviations and Acronyms

| | | | |
|---------|--|------------|--|
| PWC | Pricewaterhouse Coopers | T&D | Transmission and Distribution |
| R&R | Relief and Rehabilitation | TAMP | Tariff Authority for Major Ports |
| RCA | Rapid City Assessment | TDS | Tax Deducted at Source |
| REL | Reliance Energy Limited | TfL | Transport for London |
| RFP | Request for Proposal | TIFAC | Technology, Information, Forecasting and Assessment Council |
| RFQ | Request for Qualification | TRAI | Telecom Regulatory Authority of India |
| RGSH | Rajiv Gandhi Super-speciality Hospital | UASL | Unified Access Services Licensees |
| RIL | Reliance India Ltd | UIDSSMT | Urban Infrastructure Development Scheme for Small and Medium Towns |
| RKS | Rogi Kalyan Samiti | ULB | Urban Local Body |
| RLDA | Rail Land Development Authority | ULCRA | Urban Land Ceiling and Regulation Act |
| RLM | Remote Load Management | UMPP | Ultra Mega Power Projects |
| RO | Reverse Osmosis | UMTS | Urban Mass Transit System |
| ROB | Rail over Bridge | UN-HABITAT | United Nations Human Resettlement Programme |
| RoE | Return on Equity | USO | Universal Services Obligation |
| ro-ro | Roll-on Roll-off | USOF | Universal Services Obligation Fund |
| RTD | Rural Teledensity | USP | Universal Service Providers |
| RVNL | Rail Vikas Nigam Ltd | UTDB | Uttarakhand Tourism Development Board |
| RWS | Rural Water Supply | VAS | Value added services |
| SAA | Sample average approximation | VCO | Village Coordinator |
| SDP | State Domestic Product | VGf | Viability Gap Funding |
| SERC | State Electricity Regulatory Commission | VWSC | Village Water & Sanitation Committee |
| SEZ | Special Economic Zone | WBHIDCO | West Bengal Housing Infrastructure Development Corporation |
| SGBC | Sant Gadge Baba Campaign | WFSL | Western Freeway Sea Link |
| SHI | Social Health Insurance | WiMax | Worldwide Interoperability for Microwave Access |
| SLA | Service Level Agreements | WPC | Wireless Protocol Committee |
| SMART | Simple, Moral, Accountable, Responsive, and Transparent | WRD | Water Resources Department |
| SMUHMTS | Sikkim Manipal University of Health, Medical, and Technological Sciences | WTG | Wind Turbine Generator |
| SPV | Special Purpose Vehicle | | |
| SRP | Sector Reform Project | | |
| SSF | Slow Sand Filter | | |
| SSS | Site Situation Study | | |
| SWM | Solid Waste Management | | |