



# Catalogue of Research Reports on Infrastructure Sectors

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# ABOUT US

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**India Infrastructure Research** is a division of India Infrastructure Publishing Private Limited, a company dedicated to providing information on the infrastructure sectors through magazines, conferences, newsletters and research reports.

**India Infrastructure Research** publishes research reports in the areas of power, oil & gas, ports & shipping, roads & bridges, telecommunications, aviation and water.

Our reports are acknowledged as high-quality, user-friendly, up-to-date, accurate and comprehensive sources of information. They range from sector overviews (**Power in India**, for example) to more intensive studies of segments and subsegments (such as **Power Transmission in India** and **Power Distribution in India**).

Our clients include most organisations involved in the infrastructure sectors – multinationals, top Indian corporates, commercial and investment banks, consulting companies, public sector companies, government agencies, multilateral agencies and legal firms.

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	<b>21. PROFILES OF PRIVATE NETWORK DEVELOPERS AND OPERATORS</b> ..
	- Adani Transmission Limited; Sterlite Power Transmission Limited; Kalpataru Power Transmission Limited; CLP India; Sekura Energy; Essel Infraprojects; Essar Power Transmission; L&T Infrastructure Development Projects; Techno-Electric & Engineering Company; Others
	Each key player profile will include data and information on:
	- Growth in transmission network
	- Operational performance
	- Financial performance
	- Future plans
	- Contact details

The report will be available in a PDF format.

**1. EXECUTIVE SUMMARY**

**SECTION I: SEGMENT ANALYSIS, KEY DEVELOPMENTS AND COVID-19 IMPACT**

**2. SECTOR SIZE AND GROWTH**

- Trends in Power Demand; Growth in Distribution Line Network; Growth in Distribution Transformer Capacity; Trends in Substation Additions; Energy Sales Trends; Growth in Number of Consumers; Trend in AT&C Losses; Metering Coverage; Key Issues and Concerns; The Way Forward

**3. KEY POLICY AND REGULATORY DEVELOPMENTS**

- Updates on UT privatisation process; Discom Liquidity Package; Draft SBDs for Discom Privatisation; Draft EA Amendment Bill 2020; New Tariff Policy; Draft Electricity Rights of Consumers Rules 2020; Covid Relief Measures by MoP & CERC; Draft LPS Rules 2020; DBT proposal for Power Subsidies; Others

**4. OTHER RECENT DEVELOPMENTS**

- Key Developments under Government Schemes; Updates under SMNP; Odisha Discoms Sale update; Reduction in LPS and Fixed charges waiver; PPA-related updates; Recent Tariff Hikes; Distribution Franchises Updates; New Technology Initiatives (Blockchain, Digitalisation, EVs, etc.)

**5. IMPACT OF COVID-19 ON DISCOMS**

- Overall Sector Impact; Impact of Covid on Discom Demand; Impact on Discom Finances and Revenues; Discom Bailout Package; Other Policy and Regulatory Relief Measures; Mitigation Measures by Discoms; Post Covid Recovery & Strategies

**6. INTER-DISCOM COMPARISON (2015-16 to 2019-20)**

- Consumer Base; Energy Sales; Line Length; Transformer Capacity; AT&C Losses; ACS-ARR Gap; Power Purchase Costs; Net Profits; Metering Coverage; Reliability Indexes

**7. FUTURE OUTLOOK FOR NETWORK GROWTH (till 2025-26)**

- Growth Drivers; Projected Line length additions; Projected Substation Additions; Projected Distribution Transformer Capacity Additions; Projected Metering Requirements

**8. FUTURE OUTLOOK FOR COSTS, TARIFFS AND FINANCES**

- Projected Power Purchase Costs; Tariff Outlook; Projected Discom Losses; Projected Investments; Issues and Concerns

**9. PROJECTED EQUIPMENT REQUIREMENTS (till 2025-26)**

- Projected Investments in Distribution Network; Growth Drivers; Projected Equipment Demand

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**10. FOCUS ON DISCOM PRIVATISATION**

- Analysis of SBDs for Privatisation; UT Privatisation Plans; Privatisation Models; State-level Developments; Stakeholder-wise Opportunities; Recent Tenders Floated; Issues & Concerns; Outlook

**11. 250-MILLION SMART METERS**

- Current Scenario; Progress So Far; Policy Initiatives; Industry Readiness; Business Models; Recent and Upcoming Smart Meter Tenders; Stakeholder-wise Opportunities; Issues and Concerns; Future Outlook

**12. DISTRIBUTION FRANCHISEES**

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**14. FINANCIAL PERFORMANCE (2015-16 to 2019-20)**

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**15. OUTSTANDING DISCOM DUES**

- State-wise Trends; Utility-wise Performance in Overdue Payments; Genco-wise Analysis; Trends in dues to RE Generators; Overdue Days; Discom Bailout Package Details; Issues & Concerns; Outlook

**SECTION IV: PROGRAMME UPDATES**

**16. UDAY REVIEW**

- Overview; New Reforms -Linked Result Based Scheme for Distribution; Aggregate Losses; Impact of Covid-19; AT&C Losses;

ACS-ARR Gap; Outstanding Dues from PRAAPTI; Smart Meter Installations; Progress under other Parameters (feeder metering, UJALA, etc.); Issues and Concerns; Outlook

**17. INTEGRATED POWER DEVELOPMENT SCHEME (IPDS)**

- Scheme Coverage and achievements so far; Sanctions and Disbursements; Infrastructure Additions under IPDS; Smart Meter Installations; Update under RAPDRP; IT enablement under Phase-II; GIS m; Digital Initiatives

**18. SMART METER NATIONAL PROGRAMME (SMNP)**

- Overview and Programme Targets; State-wise Progress; Experience and Learnings so far; Tender Updates; Recent Developments; Issues and Concerns

**19. DDUGJY**

- Scheme Coverage; Sanctions and Disbursements; Physical Progress so far; State-wise Progress of Sanctioned Projects

**20. NATIONAL SMART GRID MISSION**

- MoP-sanctioned Pilot projects; Key Learnings from Pilots; Status of NSGM-approved Projects; Notable SG initiatives by Discoms; Issues and Concerns

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**22. EXPENDITURE ANALYSIS (2015-16 to 2019-20)**

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**23. O&M COSTS (2015-16 to 2019-20)**

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**24. TARIFF TRENDS (2015-16 to 2019-20)**

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**25. POWER PURCHASE COSTS (2015-16 to 2019-20)**

- Year-wise Trends in Power Purchase Costs (aggregate and per unit); Trends in Utility-wise Power Purchase Costs (aggregate and per unit); Impact of Recent Developments on Power Purchase Costs; Source-wise Power Purchase Costs Trends; Long-term Power Procurement Trends; Short-term Power Trading Trends

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Each Profile would cover the following:

Area of Operations; Total number of Customers; Line Length Additions; Transformer and Substation Capacity; Metering Coverage; System Reliability Performance (SAIFI, SAIDI); Energy Sales (HT and LT); AT&C losses; Billing and Collection Efficiency; Revenue Gap; O&M Costs; Power Purchase Costs; Capex; Net Profits; Future Network Additions and Investments; Contact Details

*The report will be available in a PDF format.*

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*This section will have chapters pertaining to the solar power project pipeline, investment requirements and capacity outlook for 25-30 African countries like Algeria, Angola, Botswana, Cameroon, Democratic Republic of the Congo, Egypt, Ethiopia, Ghana, Guinea, Kenya, Libya, Madagascar, Mauritius, Morocco, Mozambique, Namibia, Niger, Nigeria, Rwanda, Senegal, Seychelles, Sierra Leone, South Africa, Sudan, Tanzania, Togo, Tunisia, Uganda, Zambia and Zimbabwe. Each country profile chapter will provide information on:*

- Solar Power Potential
- Growth of Solar Power Capacity
- Key Growth Drivers
- Evolving Policy and Regulatory Scenario
- Project Allocation Mechanisms (FIT, competitive bidding, government schemes, etc.)
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Trends, Economics, Options & Outlook + A comprehensive database of 2,800 Captive Power Plants

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\*CPPs from the following Industries would be covered:

- Metals and Minerals
- Cement
- Petrochemicals and Refineries
- Chemicals
- Textiles
- Engineering
- Pulp and Paper
- Fertilisers
- Sugar
- Institutional Users
- Group Captive
- Etc.

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*The report is available in a PDF format.*



## Emerging Economics, Evolving Regulatory Framework, Increasing Opportunities and Changing Risks

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#### 1. MARKET OVERVIEW, KEY TRENDS AND RECENT DEVELOPMENTS . . .

There is a rising popularity among developers, especially renewable energy players, to go for third-party direct sale agreements. States of Karnataka, Tamil Nadu, Andhra Pradesh and Telangana in the southern region of India and Rajasthan, Punjab and Haryana in the northern region of the country are fast catching up with open access transactions. But there are significant challenges in the growth of this segment, especially those pertaining to discoms' resistance to let go of their high-end consumers.

- Size and Growth of Open Access-based Power Projects
- Renewable Energy-based Open Access Projects: Year-wise Trends, Source-wise Share
- Participation of Open Access Consumers in the REC Market: Volume Trends, Price Trends
- Leading States
- Key Growth Drivers
- Tariff Trends in Open Access through Solar and Wind
- Key Issues and Challenges

#### 2. IMPACT OF AMENDMENTS IN ELECTRICITY ACT, 2003 . . . . .

- Amendments Pertaining to Open Access for Renewables
- Likely Impact on Growth of Open Access-based PPAs
- Unaddressed Issues
- Industry Experts' Opinions and Recommendations

#### 3. EXISTING OPEN ACCESS POLICY AND REGULATORY SCENARIO . . . . .

The policy and regulatory framework in this space is currently highly dispersed and varied across states, and is not even stable over the years. There is always a risk of open access charges changing year on year, making it a risky proposition to invest in.

- Overview of Open Access Charges and Losses: For Solar Projects, For Wind Projects
- Model Regulations for Intra-state Open Access and Group Captive
- State-wise Orders of Open Access/Group Captive
- State-wise Implementation Status Overview
- State-wise Power Demand and Supply Overview
- RPO Trajectory for Open Access Consumers
- Key Issues and Challenges

#### 4. INDUSTRY STRUCTURE AND BUSINESS MODELS . . . . .

The industry structure in the renewable open access segment has been emerging gradually with more number of players entering into this space. Project developers and investors are currently cautious of investing significantly in this segment, but the trend is now changing.

- Power sale options: Bilateral, Collective, REC
- Industry Structure
- Key Players and Capacities: Solar Segment, Wind Segment
- Risks and Concerns

#### 5. TERMS OF THIRD-PARTY POWER SALE CONTRACTS . . . . .

It is important for both the buyers and sellers to clarify and list out their expectations and accordingly draw up the commercial power sale contract as per the applicable regulatory framework in the respective state.

- Time Period
- Extension Provision
- Tariff and Escalations

- Provision for Changes in Regulatory Charges
- Penalties
- Legal Terms

#### 6. ROLE OF ENERGY BANKING, F&S AND DEVIATION SETTLEMENT MECHANISM . . . . .

Energy banking will play a key role in the success of solar and wind power-based open access projects. Banking is presently allowed by SERCs upon the levy of a banking charge, which differs in magnitude across states.

Rules around energy banking are specified in different types of documents in various states. Additionally, various attributes of the energy banking framework also differ across states.

- State-wise Energy Banking Mechanism for Open Access Projects: Banking Charge, Banking Period, Buy-back Rate, Restrictions on Time of Injection, Withdrawal of the Banked Energy, Other Attributes (seasonality constraints, buy-back rates, accounting for RPO, etc.)
- State-wise Emerging Energy Banking Framework
- State-wise Forecasting and Scheduling
- Deviation Settlement Charges

#### 7. STATE PROFILES . . . . .

This chapter will include profiles of Andhra Pradesh, Karnataka, Tamil Nadu, Maharashtra, Gujarat, Rajasthan, Madhya Pradesh, Telangana, Uttar Pradesh, Chhattisgarh, Haryana, Delhi, Punjab, etc.

- Open Access Charges and Exemptions for Solar and Wind Power: Transmission Losses, Distribution Losses, Wheeling Charges, Cross Subsidy Surcharge, Additional Surcharge, Reactive Energy Charges, Standby Charges, Banking of Surplus Solar Power, Scheduling of Power, Energy Metering
- Key Players and Capacities: Overall Solar, Solar Open Access, Overall Wind, Wind Open Access
- Landed Cost and Return Analysis
- Process and Approvals for Open Access Projects
- Key Industrial and Corporate Clusters: Existing, Upcoming

#### 8. PROJECTED OPEN ACCESS MARKET . . . . .

Over 2 GW of green power is being sold to big corporates through direct agreements and the trend is northbound as more and more corporates and industries are joining in the race. The business case for renewable energy based open access is getting stronger with the decreasing cost of green power and increasing cost of thermal power.

- Short-term (2019-23) and Long-term (2024-28) Projections
- Renewable-based Open Access Capacity Projections
- Open Access Projected Tariff and Pricing Trends
- IRR Projections
- Future Growth Drivers
- Expected Market Restraints

#### EXPERT OPINION . . . . .

The report will feature 5-8 interviews of senior representatives at regulatory commissions, large open access consumers and key open access project developers, and experienced industry consultants

*The report is available in a PDF format.*

## Market Trends, Outlook and Opportunities

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**EXECUTIVE SUMMARY** .....

With the growing demand for power in urban areas and industries, underground cable systems are becoming an increasingly indispensable part of power transmission and distribution systems. With improved technologies and increased reliability, the cost differential between underground cables and overhead power lines is narrowing and utilities are acknowledging the benefits associated with underground cabling. This report will attempt to take a look at the key trends in the deployment of underground cables so far; analyse the plans and proposal of T&D utilities; examine new and evolving technology improvements and solutions being offered by the industry; as well as assess the key issues and challenges.

**1. T&D INDUSTRY OVERVIEW** .....

The T&D industry has been growing steadily with investments being made in system strengthening and capacity additions. This chapter gives an overview of the T&D industry and will focus on:

- Growth and Size of Existing T&D Networks
- Recent T&D Network Additions
- Projected T&D Network Additions
- Projected Capex (till 2022-23)
- Future Outlook
- Issues and Challenges

**2. MARKET SIZE AND GROWTH FOR UNDERGROUND CABLES** .....

Most of India's T&D network continues to be strung overhead across the country; however, concerns about reliability and quality of supply are making utilities gradually replace their networks with underground lines. This chapter gives an overview on the new and emerging utility requirements in the underground cabling segment and will cover the following:

- Experience so far in T&D Networks
- Emerging Utility Requirements
  - Transmission
  - Distribution
- Major Projects Commissioned
  - Transmission
  - Distribution
- Major Projects Awarded/Under Construction
  - Transmission
  - Distribution
- Key Recent Tenders
- Issues and Challenges

**3. RECENT TRENDS AND ADVANCES** .....

Well-designed and well-installed underground cable systems are expected to have a service life of 30-40 years. Utility providers, transmission companies and cable manufacturers are hence, looking for new technologies and solutions to respond to new grid challenges. This chapter looks at the new and promising technologies, designs and solutions for underground cable networks.

- Design, Laying and Construction Processes
- Product and Technology Trends
- Market Trends and Developments (JVs/Acquisitions/Partnership Deals)
- Pricing and Cost Trends

**4. OPPORTUNITIES UNDER KEY CENTRAL/STATE GOVERNMENT PROGRAMMES** .....

Underground cables are an important part of several central government initiatives for improving T&D networks under IPDS. This chapter provides the details of plans and targets of works proposed to be taken up under various schemes.

- Snapshot of Key Government Programmes (IPDS, Green Energy Corridors, State Government Initiatives, etc.)
- Physical Targets for UG Cabling Works
- Funding Availability for UG Cabling Projects
- Issues and Concerns

**5. OPPORTUNITIES UNDER SMART CITIES MISSION** .....

The Smart Cities Mission offers significant opportunities for underground cabling in key cities. Some cities such as Indore, Belagavi, Dharamshala, Lucknow, Kanpur and Tirupati are implementing projects for setting up underground cabling network for utilities such as electric wires, water pipelines, stormwater drains, sewers and telecommunication cables. This chapter provides the details of plans and targets of works proposed to be taken up under various schemes.

- Snapshot of the Mission
- Physical Targets for UG Cabling Works
- Projects Completed so Far in Key Cities
- Projects Under Construction/ Awarded
- Proposed Projects
- Issues and concerns

**6. OUTLOOK AND PROJECTIONS (till 2022)** .....

This chapter will give a snapshot of the investments and physical targets proposed for underground cabling networks by transcos and discoms. The information presented in this chapter is based on both primary and secondary information collected from transcos and discoms.

- Growth Drivers for UG Cabling
- Expected Demand for UG Cables
- Plans and Targets of Utilities by Segment
  - Transmission
  - Distribution
- Budgeted Capital Expenditures on UG Cabling
- Future Outlook

**7. LEADING PLAYERS** .....

This chapter primarily focuses on the profiles of key vendors and technology providers for underground cabling. Each profile covers the following information:

- Brief Company Overview
- Key Product Offerings
- Existing Manufacturing Capacity
- Financial Performance
- Future Plans

*The report is available in a PDF format.*

## Changing Landscape, Growing Role of Digitisation and New Opportunities

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#### 1. EXECUTIVE SUMMARY

Solar plants are built to last 20-25 years. After the engineering procurement and construction period is completed, developers need to ensure that the operations and maintenance (O&M) activities are seamless for sustained energy generation over the project lifetime. The report will highlight the emerging opportunities in this space and the growing role of new technologies like automation and artificial intelligence.

#### 2. MARKET OVERVIEW

In the initial years of solar power development in India, O&M was often coupled with EPC and performed by the same vendors, but of late, solar O&M has emerged as a separate market with its own landscape, trends and dynamics. This chapter will cover the following areas:

- ❖ Current size of the solar O&M market
- ❖ Market size by segment
  - Utility-scale, Rooftop, Canal-top & floating solar
- ❖ Key growth trends and drivers
- ❖ O&M Evolution - Reactive to Predictive Analysis
  - Applications in solar O&M, Cost and time savings
- ❖ Emerging Role of Energy Storage
- ❖ Key issues and concerns

#### 3. COST TRENDS

The cost of O&M services has been declining over the past few years and the downward trend is expected to continue. The cost composition itself is changing due to greater automation and use of advanced tools. This chapter will cover the following areas:

- ❖ Solar O&M cost trajectory (2012-18)
- ❖ Cost breakup analysis
  - Vehicles and logistics, Equipment and tools, Overheads, Personnel/ Manpower, Digital, Others
- ❖ Cost projections (2019-24)
  - Business model evolution, Key cost considerations, Impact of scale, Impact of energy storage, Future cost estimates

#### 4. EMERGING O&M BUSINESS MODELS

Globally, there has been a rise of third party solar O&M service providers. As more sophisticated and structured approach emerges in the solar O&M market, third party providers are able to deliver more value to solar investors and owners. This chapter will cover the following areas:

- ❖ Capex-based
- ❖ Profit-sharing
- ❖ Fixed cost
- ❖ O&M extensions
- ❖ Others

#### 5. TERMS OF O&M CONTRACTS

It is important for both developers and O&M service providers to clarify and list out their expectations and accordingly draw up a long-term contract. An effective contract will result in higher plant efficiencies. This chapter will cover the following areas:

- ❖ Time periods
- ❖ Product warranties
- ❖ Performance guarantees/SLAs
- ❖ Penalties
- ❖ Ownership
- ❖ Legal terms

#### 6. GRID MANAGEMENT BY O&M PLAYERS

As the government becomes stricter in its implementation of forecasting, scheduling and deviation settlement mechanism regulations, grid management will become a key component of O&M players. Integration of energy storage on to existing plants will lead to a greater O&M play. This chapter will cover the following areas:

- ❖ Forecasting and scheduling
- ❖ Deviation settlement management
- ❖ Integration of energy storage into existing plants
- ❖ Cost implications
- ❖ Experience so far

#### 7. O&M COMPANY PROFILES

A large number of O&M focused players are coming up, some as hive-offs from existing EPC companies and others as independent specialists. This chapter will have 5-8 profiles of key O&M players in India covering the following:

- ❖ Project portfolio
- ❖ Service offerings
- ❖ Technology tie-ups
- ❖ On-ground experience
- ❖ In-pipeline capacity
- ❖ Etc.

#### 8. DIGITALISATION AND AUTOMATION AT PLANT LEVEL

Digitalisation and automation will play a key role in providing efficient O&M services, thereby changing the current O&M cost composition, which is currently dominated by manpower expenses. New technologies are being adopted for improving asset lifecycle management, predictive maintenance, remote sensing and control, cloud computing, and use of drones for visual imaging. A number of companies have also already started using robotics for cleaning modules. This chapter will cover the following areas:

- ❖ Emerging role, applications and use case for the following
  - Manpower and material management, Automated monitoring and big data analytics, Robotics, drones and wearables
- ❖ Growing role of artificial intelligence
  - Machine learning applications, AI field assistants and predictive analytics, Existing use cases
- ❖ Key technology providers
- ❖ Industry Perspective  
(Views of key personnel from the solar O&M industry and technology providers on the growing role of AI, robotics and data analytics)

#### 9. KEY CHALLENGES, BEST PRACTICES AND CASE STUDIES

The lack of attention given to O&M practices is one of the primary challenges that the segment is facing. If the plant is not maintained properly, developers can lose up to 15 per cent of the returns. This chapter will cover the following areas:

- ❖ O&M challenges matrix
- ❖ Best practices (Globally and in India)
- ❖ Case studies (This will cover successes and failures of various technologies, business models and strategies adopted by O&M players)

#### 10. PROJECTED O&M MARKET SIZE (FROM 2019-20 TO 2024-25)

The total addressable market for solar PV O&M is expected to reach 30 GW in 2018-19. It is likely to more than triple by 2022 to exceed 100 GW. In fact, going forward, as the installed base gets larger, O&M revenue may even exceed the development and construction revenue. This chapter will cover the following areas:

- ❖ Impact factors
- ❖ Emerging O&M industry structure
- ❖ Short-term projections
- ❖ Medium-term projections
- ❖ Long-term projections

*The report is available in a PDF format.*

## Key Trends, Risks, Alternatives and Outlook

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*The report is available in a PDF format.*

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- Solid Waste Management Rules, 2016
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This section has 30 chapters pertaining to the renewable energy scenario and outlook for 30 African countries. These includes Algeria, Angola, Botswana, Cameroon, Democratic Republic of the Congo, Egypt, Ethiopia, Ghana, Guinea, Kenya, Libya, Madagascar, Mauritius, Morocco, Mozambique, Namibia, Niger, Nigeria, Rwanda, Senegal, Seychelles, Sierra Leone, South Africa, Sudan, Tanzania, Togo, Tunisia, Uganda, Zambia and Zimbabwe.

Each country profile provides information on:

- Economic Scenario and Demography
- Power Demand and Supply Scenario
- Resource-wise Renewable Energy Potential
- Segment-wise Size and Growth (Solar, Wind, Bioenergy, etc.)
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*The report is available in a PDF format.*

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- Gaya (India Power Corporation Limited)
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*The report is available in a PDF format.*



(January 2018)

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*The report is available in a PDF format.*

## Sector Analysis, Impact of Covid-19 on Project Pipeline, Investments and Capacity Addition

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*(This section will cover network size and growth, policy framework, recent developments, and project portfolio of each state)*

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*(This section will cover operations, financial performance, recent developments, project portfolio, strategies being adopted in light of Covid-19 & future plans of each company)*

*The report is available in a PDF format.*

## Sector Analysis, Impact of Covid-19, Market Opportunities and Outlook

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Each chapter will cover the following: Project Scope & Features; Progress So Far & Key Milestones; Financing Experience & New Funding Options; Disruptions/Delays due to Covid-19; Revised Investment Requirements, Targets & Timelines; New Technologies & Solutions; New Corridors/Sections Identified; Issues & Challenges; Upcoming Contracts & Tenders

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*This section will cover operations/areas of business, financial performance, recent developments & initiatives, project portfolio, strategies being adopted in light of Covid-19 and future plans of each company*

## DATABASE OF KEY PROJECTS

*A comprehensive excel-based database of ongoing and upcoming projects in the rail-ways sector.*

Each project will provide information on: Scope; Project Cost; Current Status; Segment (Tracks, S&T, Tunnels, Bridges, DFC, HSR, RRTS, Suburban rail, Station redevelopment, Rolling Stock, Electrification, etc.); Mode of Implementation (PPP or EPC); Contractor/Developer; Technology/Equipment Supplier (wherever available); Funding Sources (wherever available); Expected Network Addition; Expected Completion Date

*The report will be available in a PDF format.*

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*Each profile will cover the project scope (network length, alignment details, number of stations, rolling stock, fare system, signaling and telecommunications, traction, etc.), ownership details, implementing agency, cost estimates, key consultants, key contractors, key milestones, funding pattern, actual/expected ridership, recent contracts, upcoming tenders, and the detailed current status.*

*The report will be available in a PDF format.*



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*Each profile provides information on current infrastructure, traffic & capacity analysis, ongoing & upcoming projects, etc.*

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*The report will be available in a PDF format.*

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*The report is available in a PDF format*

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*Each profile provides an overview of the airport, key stakeholders involved, ownership structure, traffic trends, financial performance, current capacity, expansion plans, key initiatives, recent contracts; etc.*

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*Each profile provides an overview of the airport, traffic projections, ownership structure, expected capacity, future timelines, recent contracts; expansion, etc.*

*The report is available in a PDF format*



Future Needs, Emerging Trends and New Opportunities

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- 24. FREIGHT FORWARDING**
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*Each of the above industries includes Size and Growth, Trends and Developments, Logistics and Warehousing Needs and Requirements, Industry Outlook and Issues and Challenges.*

*The report is available in a PDF format.*

## Segment Analysis, Emerging Trends, New Opportunities and Outlook

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*This chapter will analyse the impact of these initiatives and policy changes on container terminal operators, container train operators, road transporters, trucking industry, shipping companies, CFSs, ICDs, etc.*

##### 9. INFRASTRUCTURE DEVELOPMENT UNDER OTHER KEY PROGRAMMES

- Sagarmala Programme; Bharatmala Programme; Jal Marg Vikas Project; Delhi Mumbai Industrial Corridor; Others

*This chapter will cover the overview, key features, container infrastructure capacity, current status, and upcoming opportunities under each of these programmes/projects.*

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Each of the following chapters will include:

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*Each profile will cover information on throughput, current capacity & capacity utilisation, key facilities, draught levels, dwell time, equipment availability and planned expansion.*

##### 19. KEY CONTAINER TRAIN OPERATORS .....

- Adani Logistics Limited; Arshiya Rail Infrastructure Limited; Container Corporation of India Limited; Central Warehousing Corporation; Distribution Logistics Infrastructure Private Limited; Gateway Rail Freight Limited; Hind Terminals Private Limited; IndiaLinx; Inlogistics; International Cargo Terminals and Rail Infrastructure Private Limited; Kribhco Infrastructure Limited; etc.

*Each profile will cover information on company operations, existing infrastructure, network covered, financial performance, future plans, etc.*

##### 20. KEY ROAD TRANSPORT OPERATORS .....

- Transport Corporation of India Limited; Allcargo Logistics; Associated Road Carriers Limited; Coastal Roadways; Darcl Logistics; DRC Logistics; East West Freight Carriers Private Limited; Gati KWE; Patel Roadways; Prakash Roadlines Private Limited; TVS Southern Roadways Limited; VRL Logistics Limited; Others

*Each profile will cover information on company operations, existing fleet, geographical coverage, financial performance, future plans, etc.*

*The report is available in a PDF format.*

Market Analysis, New Opportunities and Outlook

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**7. MARKET OPPORTUNITIES (TILL 2024-25)**

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*(This chapter includes views/perspective of key dredging companies and technology/equipment providers on the key issues and challenges affecting the implementation of dredging projects)*

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**DATABASE OF DREDGING PROJECTS**

A comprehensive database of key dredging projects with information on quantity dredged, contractor, location, contract value, type of dredged deployed, etc. The database would include projects being undertaken at the major ports, non-major ports, national waterways, oil and gas fields, rivers, beaches, etc. It would also cover the ongoing and upcoming projects under the central government programmes.

*The report is available in a PDF format.*

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<p><b>1. EXECUTIVE SUMMARY</b> .....</p> <p><b>SECTION I: MARKET OVERVIEW AND OUTLOOK</b></p> <p><b>2. OVERVIEW</b> .....</p> <ul style="list-style-type: none"> <li>- Growth in India's Bus Market</li> <li>- Current Share of Clean Buses</li> <li>- Recent Trends</li> <li>- National Electric Mobility Mission and FAME Scheme</li> <li>- Key Regulations and Incentives</li> <li>- Investment Needs and Requirements</li> <li>- Issues and Challenges</li> <li>- Future Outlook</li> </ul> <p><b>3. GROWTH DRIVERS</b> .....</p> <ul style="list-style-type: none"> <li>- Key Trends</li> <li>- Focus on Emission Control</li> <li>- Strengthening of Public Transport</li> <li>- Government's Subsidy Scheme</li> <li>- Rising Oil Imports</li> <li>- Smart Cities Mission</li> </ul> <p><b>4. OUTLOOK AND MARKET OPPORTUNITIES</b> .....</p> <ul style="list-style-type: none"> <li>- Procurement Plans of Transport Undertakings</li> <li>- Key Upcoming Bids and Tenders</li> <li>- Future Demand Projections</li> <li>- Market Opportunities <ul style="list-style-type: none"> <li>● Bus Manufacturers</li> <li>● Battery Manufacturers</li> <li>● Other Component Suppliers</li> </ul> </li> </ul> <p><b>5. COMPETITIVE LANDSCAPE</b> .....</p> <ul style="list-style-type: none"> <li>- Key Players (Indian and Global) <ul style="list-style-type: none"> <li>● Company Profile</li> <li>● Operational Fleet of Clean Buses</li> <li>● Future Plans</li> <li>● Key Milestones</li> <li>● Recent Collaborations/JV/Technology Partner</li> </ul> </li> <li>- Current Market Shares</li> </ul>	<p><b>SECTION II: SEGMENT FOCUS</b></p> <p><b>6. HYBRID BUS MARKET</b> .....</p> <ul style="list-style-type: none"> <li>- Types of Hybrid Buses</li> <li>- Operational Fleet</li> <li>- Experience So Far</li> <li>- Procurement Models and Incentives</li> <li>- Technology Options</li> <li>- Cost Benefit Analysis</li> <li>- Key Issues and Challenges</li> <li>- Demand Projections and Market Opportunities</li> </ul> <p><b>7. ELECTRIC BUS MARKET (BATTERY OPERATED)</b> .....</p> <ul style="list-style-type: none"> <li>- Experience So Far</li> <li>- Lesson from China</li> <li>- Operational Fleet</li> <li>- Procurement Models and Incentives</li> <li>- Recent Orders and Investments Made So Far</li> <li>- FAME Phase I Bidding-Key Takeaway</li> <li>- Cost Benefit Analysis</li> <li>- Battery Technology Option</li> <li>- Potential of Battery Swapping</li> <li>- Charging Infrastructure and Technologies</li> <li>- Impact of Charging on Grid</li> <li>- Issues and Challenges in E-bus Adoption</li> <li>- Demand Projections and Market Opportunities</li> </ul> <p><b>8. GAS-BASED BUS MARKET (CNG, LNG, BIOGAS)</b> .....</p> <ul style="list-style-type: none"> <li>- Current Size and Growth</li> <li>- Operational Performance: Costs and ROI</li> <li>- Experience So Far</li> <li>- Recent Contract and Tenders</li> <li>- Initiatives So Far</li> <li>- Potential for LNG and Biogas Buses</li> <li>- Issues and Challenges</li> <li>- Demand Projections and Market Opportunities</li> </ul> <p><i>The report is available in a PDF format.</i></p>
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*The report is available in a PDF format.*



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*The report is available in a PDF format.*

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The report is available in a PDF format.



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*The report is available in a PDF format.*

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The report is available in a PDF format.

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The report is available in a PDF format.

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*The report will also provide a comprehensive Excel-based database of ongoing and upcoming projects across the water supply, sewerage, waste, energy, mobility, buildings, roads, safety and security, e-governance, parking, and healthcare segments.*

Each project will provide information on:

- Scope; Project Cost; Type of Project (Area-based or Pan-City); Mode of Implementation; Implementing Agency; Contractor/ Developer/Technology Vendor (wherever available); Current Status; Expected Date of Completion Etc.

*The report is available in a PDF format*

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**SECTION I: HOUSING MARKET: TRENDS, DEVELOPMENTS, PROJECTIONS AND OPPORTUNITIES****1. AFFORDABLE HOUSING SEGMENT OVERVIEW**

- Urbanisation and Demographic Trends, Current Market Size, Trends in Supply and Sales of Affordable Houses, Growth Drivers, Current Stock of Low-Income Housing, Recent and Emerging Trends, Institutional and Regulatory Structure, Outlook and Opportunities

**2. KEY GOVERNMENT ANNOUNCEMENTS AND EXPECTED IMPACT**

- Key Announcements in the Union Budget 2019-20, Expected Impact and Industry Views, Other Relief Measures by the Government and their Impact, Next Steps and Suggestions

**3. POLICY AND REGULATORY DEVELOPMENTS**

- Infrastructure Status to Affordable Housing, Impact of GST, Credit Linked Subsidy Scheme, RERA Act, Affordable Housing in Partnership (AHP) Scheme, Other Incentives, Industry Expectations and Recommendations

**4. HOUSING DEMAND AND SUPPLY INDICATORS**

- Households versus Housing Stock, Affordable Housing Demand and Supply, Demand and Supply Gap: Overall, Urban, State-wise, Rural, Houses by Habitable Conditions, Housing Congestion

**5. FUTURE OUTLOOK AND KEY PROJECTIONS**

- Housing Stock Requirement (By Region and By States), Housing Supply Projections, Projected Land Requirement, Projections for Material and Equipment Requirements, Sector Outlook

**6. PROJECT PIPELINE AND MARKET OPPORTUNITIES**

- Overall Project Pipeline, By Ownership, Project Pipeline by State, By Stage of Development, Projects under the Smart Cities Mission, Opportunities for Key Stakeholders

**7. TOP CITIES FOR AFFORDABLE HOUSING**

- Ahmedabad, Bengaluru, Chennai, Delhi NCR, Hyderabad, Kolkata, Mumbai, Pune

*(Each city profile will include information on the experience in affordable housing, completed and ongoing projects, demographic profile, state of existing infrastructure, upcoming investments, key players, opportunities, etc.)*

**8. FINANCING AND INVESTMENT SCENARIO**

- The Investment Experience
- Funding Sources
  - Bank Credit/Priority Sector Lending, Private Equity/Institutional Investors, Bond Market Transactions, National Housing Bank, Housing Finance Companies/AHFCs, Multilateral Funding Agencies, Others (ECBs/FDI/CLSS)
- Expectations from REIT Structures
- Investment Projections and Outlook
- Key Challenges

**9. PROJECT ECONOMICS: COSTS, MARGINS, RETURNS AND RISK ANALYSIS**

- Factors Impacting Project Viability, Key Cost Components, Profit Margins, Trends in Interest Rates and Prices, Project IRRs, Key Recommendations

**10. MATERIAL AND EQUIPMENT MARKET**

- Emerging Construction Technologies, Building Material and Equipment Market Size, Demand Drivers, Innovation in the Material and Equipment Market, Global Best Practices, Outlook and Upcoming Opportunities

**SECTION II: UPDATE ON GOVERNMENT PROGRAMMES: PROGRESS AND OPPORTUNITIES****11. PROGRESS REPORT: HOUSING FOR ALL BY 2022**

- Pradhan Mantri Awas Yojana (PMAY) - Urban: Scope and Objectives, Progress So Far - Physical and Financial, Completed and Ongoing Projects, Targets and Timeline, Investment Requirements
- Pradhan Mantri Awas Yojana - Gramin: Scope and Objectives, Progress So Far - Physical and Financial, Completed and Ongoing Projects, Targets and Timeline, Investment Requirements
- Deen Dayal Antyodaya Yojana
- The National Urban Livelihoods Mission

**12. PROGRESS AND OPPORTUNITIES UNDER THE SMART CITIES MISSION**

- Allocations for Affordable Housing under SCM, The Experience So Far, Key Projects, Upcoming Tenders, Investment Requirements and Market Opportunities

**SECTION III: FOCUS ON PRIVATE PARTICIPATION****13. PPP POLICY: IMPACT AND BENEFITS**

- Formats and Models: Government land, Private land, Incentives and Schemes for PPP, Impact of PPP policy, State Initiatives and Opportunities, Industry Recommendations on Policy Implementation and Incentives

**14. PRIVATE SECTOR EXPERIENCE AND OUTLOOK**

- The Experience So Far, Key Projects, Recent Announcements and Investments, Key Incentives under State Policies, Successful Case Studies, Innovative Business Models, Industry Expectations and Suggestions, Upcoming Opportunities, Segment Outlook

**15. RENTAL HOUSING MARKET**

- Overview, Size and Growth, Policy and Regulatory Landscape, Draft Model Tenancy Act, 2019, Rental Housing under PMAY, Emerging Practices - Co-living and Student Housing, State Initiatives, Global Models, Issues and Challenges, Opportunities and Outlook

**16. KEY PRIVATE PLAYER PROFILES**

- Arianth Superstructures, Design Build Serve, Dreams Group, Mahindra Lifespaces, Panvelkar Group, Provident Housing, Shapoorji Pallonji, Sheltrex, Signature Global, SNG Group, Tata Housing, VBHC, XRBIA

*(Each profile will include information on company operations, project portfolio-completed and ongoing, upcoming projects, financial performance and future plans)*

**SECTION IV: STATE-LEVEL SCHEMES, EXPERIENCE AND POTENTIAL****17. INTER-STATE COMPARISON**

- Current Infrastructure, Demographics, Housing Shortage, Key Initiatives, Future Plans

**18. KEY STATE PROFILES**

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*(Each state profile will give an overview of the housing scenario, role of key agencies and housing boards, state policy on affordable housing, new initiatives and incentives, and ongoing and upcoming housing schemes/projects.)*

*The report is available in a PDF format.*



### SUMMARY AND KEY INSIGHTS

#### SECTION I: MARKET OVERVIEW, POLICY LANDSCAPE AND GROWTH DRIVERS

##### 1. MARKET SNAPSHOT AND KEY TRENDS

- Size and Growth
- Deployment Status: By Industry Players, Under Government Programmes
- Growth Drivers
- Impact of Sector Consolidation and Financial Crisis
- Key Issues and Challenges
- Emerging Trends and Opportunities
- Future Outlook

##### 2. IMPACT OF POLICIES AND REGULATIONS

- NDCP 2018: Policy Provisions and Objectives, Execution Timelines and Status, Impact on OFC Demand
- RoW Rules: Implementation Status, State-wise Charges
- State Policies
- TRAI Recommendations and Consultations
- Policy and Regulatory Gaps
- Industry Expectations

##### 3. EMERGING OFC USE CASES AND DEMAND DRIVERS

- Backhaul Upgrades: Tower Fiberisation for 4G and 5G, Fiberisation for Small Cells
- Last Mile Fiberisation: FTTx, IBS and Wi-Fi
- New Use Cases (AI/ML, IoT, ML, Industry 4.0, AR/VR, Connected cars, telemedicine, real time monitoring etc.)

##### 4. DEMAND AND SUPPLY PROJECTIONS AND ANALYSIS

- Data Consumption - Growth Trends and Forecasts
- Projected Requirement by Industry Players
- Projected Requirement by Other Consumer Segments
- Projected OFC Requirement from Government Targets
- Capacity Expansion Plans
- Demand-Supply Gap Analysis

#### SECTION II: GROWTH DRIVERS - KEY CONSUMER SEGMENTS AND REQUIREMENTS

##### 5. TELCOS AND TOWERCOS

- Current Status of OFC Deployment
- Emerging Business Models (OFC sharing, Independent fibrecos, JVs, neutral hosts)
- Telcos Profiles (Bharti Airtel, Vodafone Idea, Reliance Jio, BSNL/MTNL): Data Traffic on Network, Current OFC Network Size, FTTH Offerings, Key Contracts and Collaborations, Future Plans and Requirements
- Towercos Profiles (Indus-Bharti Infratel, ATC India, TowerVision, etc.): Current Focus Areas, Level of Site Fiberisation, Future Plans and Requirements

##### 6. GOVERNMENT PROGRAMMES

- BharatNet: Project Overview, Progress under Phase II, Upcoming Tenders and Purchase Orders, Implementation Roadblocks, Opportunities for Private Stakeholders (Telcos and Suppliers)
- Smart Cities: Role of OFC, City-wise Update on OFC Implementation & Planning, Applications & Use Cases, Contracts Awarded & Planned

- Network for Spectrum Project
- State-level Projects and Initiatives: MahaNet, AP FibreNet, TamilNet, GujaratNet, KFON, Telangana T-Fiber, etc.

##### 7. FIXED HOME BROADBAND MARKET

- Trends in Content Consumption
- Type of Applications and Service Offerings
- Evolving Competitive Landscape
- Profiles of Key Players/Internet Service Providers - Network Size, Key Offerings, and Expansion Plans

##### 8. UTILITIES - POWER, OIL & GAS AND RAILWAYS

- Role of OFC
- Profiles of Key Utilities - Network Size, Expansion Plans and Key Contracts
- Emerging Models/Practices for Monetising OFC
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##### 9. OTHER KEY AND EMERGING SEGMENTS

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- IT sector (Requirement in Data Centres, Internal Networks of Large Enterprises, etc.)
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#### SECTION III: SUPPLY CHAIN ANALYSIS - PRODUCTION, TECHNOLOGY AND COST TRENDS

##### 10. PRODUCTION CAPACITY TRENDS

- Growth in Production Capacity
- Focus on Make in India
- Policy Impetus
- Export-Import Scenario
- Key Challenges
- Future Outlook

##### 11. COST AND TECHNOLOGY TRENDS

- Key Products and Solutions (Single/Multi-Mode, Plastic Optic Fibre, Macrobend Fibre, etc.)
- Deployment and Installation Practices
- Emerging Technology Trends
- Key Cost Components, Duties and Taxes
- Materials and Pricing Trends
- Focus on R&D

##### 12. KEY SUPPLIER PROFILES

- Aksh OptiFibre Limited, Birla Cable Limited, CommScope, Corning, Finolex Cables Limited, Himachal Futuristic Communications Ltd., HTL, Paramount Communications Limited, Polycab, STL, UM Cables Limited, Uniflex Cables, Vindhya Telelinks Limited, West Coast Optilinks

(Each player profile will give an overview of the company's operations, focus areas, current production capacity, manufacturing facilities, key projects and tenders, financial performance, capex and expansion plans)

The report is available in a PDF format

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**SUMMARY AND KEY INSIGHTS****SECTION I: TRENDS, DEVELOPMENTS, GROWTH DRIVERS AND PROJECTIONS****1. MARKET OVERVIEW AND KEY TRENDS**

- Size and Growth
- Market Structure and Competitive Landscape
- Impact of Telco Consolidation and Financial Crisis
- Emerging Trends
- Issues and Challenges
- Future Outlook

**2. IMPACT OF COVID-19**

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- Trends in Network Usage
- Demand from Non-Urban Centres
- Impact on Business Operations

**3. POLICY AND REGULATORY DEVELOPMENTS**

- NDCP 2018
- National Broadband Mission
- RoW Rules
- State Policies
- TRAI's Recommendations on Enhancing the role of IP-1s
- Policy and Regulatory Gaps
- Industry Expectations and Recommendations

**4. EMERGING BUSINESS MODELS**

- Active Infrastructure Sharing
- Neutral Hosts
- Het-Nets Provisioning and Smart Infrastructure (Fiberisation, Wi-Fi, small cells, etc.)

**5. OUTLOOK AND MARKET PROJECTIONS (till 2025)**

- Key Growth Drivers
- Data Consumption - Growth Trends and Forecasts
- Projected Growth in Tower Deployments and Tenancies
- Opportunities for Tower Companies

**SECTION II: NEW GROWTH AREAS****6. PREPARING FOR 5G -REQUIREMENTS AND OPPORTUNITIES**

- Tower Site Fiberisation
- Micro Sites
- Edge Data Centers

*(Each segment gives an overview of market size, growth drivers, current status of deployment, future expansion plans and market opportunity)*

**7. SMART CITIES -EXPERIENCE AND OPPORTUNITIES**

- Role of Telecom Infrastructure
- Applications and Use Cases
- Implementation Experience and Existing Partnerships
- Key Completed and Ongoing Projects
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**8. IN-BUILDING SOLUTIONS**

- Market Size and Adoption
- Key Solutions/Technologies
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- Emerging Business Models

- Role of Towercos
- Issues and Challenges
- Opportunities and Future Outlook

**9. NON-CORE BUSINESS OPPORTUNITIES**

- Smart Poles
- EV Charging Infrastructure
- Digital Signage and Advertising

*(Each segment covers market size, growth drivers, current and planned partnerships and contracts, and market opportunity)*

**SECTION III: TOWER DESIGN, ENERGY REQUIREMENTS AND SITE MAINTENANCE****10. TOWER DESIGNS, TECHNOLOGIES AND SOLUTIONS**

- Types of Tower Structures and Key Characteristics
- Evolving Tower Designs
- Trends in Materials Used
- Deployment and Installation Models
- Global Best Practices and Lessons

**11. ENERGY MANAGEMENT**

- Power Consumption Trends
- Cost Structure
- Types and Nature of Energy Sources
- Energy Efficiency Strategies
- Trends in Energy Storage
- Focus on Green Energy
- Industry Initiatives
- Future Outlook

**12. SITE OPERATIONS AND MAINTENANCE**

- Current Practices and Models
- Key and Emerging Technology Trends (Analytics, real time monitoring, automation)
- Focus on Managed services
- Industry Initiatives and Experience
- Challenges and Way Forward

**SECTION IV: PLAYER PROFILES****13. KEY PLAYERS**

- American Tower Corporation
- Ascend Telecom Infrastructure
- BSNL-MTNL
- Indus Towers-Bharti Infratel
- Reliance Jio Infratel
- Reliance Infratel
- Tower Vision
- Others (GTL Infrastructure, RailTel, PowerGrid, etc.)

*(Each player profile gives an overview of the company's operations, tower footprint and portfolio, focus areas, key projects, key clients, financial performance, capex and expansion plans)*

*The report is available in a PDF format*

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### SUMMARY AND INSIGHTS

#### SECTION I: MARKET OVERVIEW, TRENDS AND COVID-19 IMPACT ASSESSMENT

##### 1. INFRASTRUCTURE SNAPSHOT

- Size and Growth; Current State of Infrastructure and Infrastructure Deficit; Growth Drivers; Emerging Trends; Key Sectoral Trends; Recent Policy Changes and Government Initiatives; Fiscal and Monetary Response; Mitigation Strategies; Policy Changes and Government Initiatives; Issues and Challenges; Investment Projections; Sector wise Proposed Investment and Opportunities; Future Outlook

##### 2. IMPACT OF COVID-19 ON PROJECTS, CONSTRUCTION AND INVESTMENTS

- Expected Time and Cost Overruns (Short Term and Medium Term); Impact on Project Delivery; Impact on Investments; Capacity and Investment Outlook

##### 3. PROJECT PIPELINE ANALYSIS

- Assessment of Project Pipeline; Analysis by Sector; Analysis by Stage of Development; Analysis by Ownership; Analysis by Country; Analysis by Investment; Top Upcoming Projects in Terms of Investment; Big-ticket Opportunities to Look Out For

##### 4. MARKET OPPORTUNITIES AND FUTURE OUTLOOK

- Country-wise Planned Capacity Addition and Proposed Investment; Sector-wise Planned Capacity Addition and Proposed Investment; Market Opportunities; Future Outlook

##### 5. INVESTMENT AND FINANCING TRENDS

- Infrastructure Spending; Investment Laws and Promotion Agencies; Trends in Funding Sources (Past five Years); FDI Trends and Impact of Covid-19; New and Emerging Sources of Finance; Issues and Challenges; Risks and Historical Rates of Return; Investment Outlook in the Post-Covid World

##### 6. PRIVATE SECTOR PARTICIPATION: EXPERIENCE, CHALLENGES AND OPPORTUNITIES

- Current Scenario; Business Models; Sector-wise Private Investments; Key Completed PPP Projects; Key Upcoming PPP Projects; Key Risks and Challenges; Impact of Covid-19 on Developer Revenues; Upcoming Opportunities; Short, Medium and Long-term Outlook

##### 7. EPC MARKET: EXPERIENCE AND OPPORTUNITIES

- Current Scenario; Key Players (Domestic and Foreign); Key Contracts; Sector-wise Experience; Impact of Covid-19; Issues and Challenges; Market Opportunities; Short, Medium & Long-term Outlook

#### SECTION II: SECTOR-WISE ANALYSIS, DEVELOPMENTS AND OPPORTUNITIES

##### 8. REGIONAL INFRASTRUCTURE

- ASEAN Economic Community; Master Plan on ASEAN Connectivity 2025; ASEAN Single Window; ASEAN Highway Network ASEAN Smart Cities Network; ASEAN Single Aviation Market; ASEAN Single Shipping Market; ASEAN Power Grid and Asian Super Grid; ASEAN Broadband Corridor; China's Belt Road Initiative (BRI); Key Upcoming Cross-border Projects under MPAC 2025; Proposed Investments

##### 9. ELECTRICITY GENERATION: CONVENTIONAL

- Size and Growth; Emerging Trends and Developments; Impact of Covid-19 on Project Timelines, New Bids and Financing; Key Completed Projects; Top Upcoming Projects; Capacity Addition Targets; Technology, Costs and Tariffs; Market Opportunities; Issues and Challenges; Investment and Demand Outlook

##### 10. RENEWABLE ENERGY

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##### 11. TRANSMISSION, DISTRIBUTION AND SMART GRID

- Size and Growth; Emerging Trends and Developments; Impact of Covid-19; Smart Grid and Metering Initiatives; Recent

Developments; Technology Advancements; Key Completed Projects; Top Upcoming Projects; Proposed Investments & Capacity Addition Targets; Market Opportunities; Issues and Challenges; Sector Outlook

##### 12. OIL AND GAS: E&P, LNG AND PIPELINE INFRASTRUCTURE, REFINERY AND PETROCHEMICALS

- Size and Growth; Emerging Trends and Developments; Impact of Covid-19 on Project Timelines, New Bids and Financing; Pricing Trends; Key Projects (Completed and Ongoing); Top Upcoming Projects; Technology Advancements (Asset Monitoring and Pipeline Integrity & Safety); Proposed Investments & Capacity Addition Targets; Market Opportunities; Issues and Challenges; Sector Outlook

##### 13. ROADS

- Size and Growth; Emerging Trends and Developments; Impact of Covid-19 on Project Timelines and Financing; Key Projects (Completed and Ongoing); Top Upcoming Projects; Technology Advancements; Proposed Investments & Capacity Addition Targets; Market Opportunities; Issues and Challenges; Sector Outlook

##### 14. RAILWAYS

- Growth Drivers; Size and Growth; Key Trends; Recent Developments including the Impact of Covid-19 on Project Timelines, New Bids and Financing; Proposed Investments & Capacity Addition Targets; Top Upcoming Projects; Market Opportunities; Issues and Challenges; Sector Outlook

##### 15. URBAN TRANSPORT

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##### 16. SEAPORTS

- Size and Growth; Emerging Trends and Developments; Recent Developments; Impact of Covid-19 on ASEAN Maritime Sector; Key Completed Projects; Key Ongoing Projects; Top Upcoming Projects; Technology Advancements (Mechanisation and Modernisation); Proposed Investments and Capacity Addition Targets; Market Opportunities; Issues and Challenges; Sector Outlook

##### 17. AIRPORTS

- Size and Growth; Emerging Trends; Recent Developments; Impact of Covid-19 on Project Timelines, New Bids and Financing; Technology Advancements (Passenger Facilitation and Cargo Handling); Tariff Trends; Key Projects (Completed and Ongoing); Top Upcoming Projects; Proposed Investments & Capacity Addition Targets; Market Opportunities; Issues and Challenges; Sector Outlook

##### 18. WATER AND WASTE

- Size and Growth; Emerging Trends; Recent Developments; Impact of Covid-19 on Project Timelines, New Bids and Financing; Technology Advancements (Treatment, Metering & Loss Reduction and Asset Management); Costs and Tariffs; Key Projects (Completed and Ongoing); Top Upcoming Projects; Proposed Investments & Capacity Addition Targets; Market Opportunities; Issues and Challenges; Sector Outlook

#### SECTION III: COUNTRY PROFILES

##### 19. COUNTRY PROFILES

- Brunei; Cambodia; Indonesia; Lao PDR; Malaysia; Myanmar; The Philippines; Singapore; Thailand; Timor-Leste; Vietnam

*Each country profile will cover the current economic scenario, current state of infrastructure, sector-wise size and growth, trends in budgetary allocations, mitigation strategies and relief measures to deal with the impact of Covid-19, expected capacity additions, proposed investments, and a snapshot of key completed and upcoming projects.*

#### SECTION IV: DATABASE OF KEY PROJECTS

*The database will have information on project scope, cost, capacity, location, implementing agency, ownership, EPC contractor/developer, equipment provider, current status, date of commencement of construction/month of award, and expected date of completion*

*The report is available in a PDF format*

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## 1. IRRIGATION MARKET OVERVIEW .....

- Size and Growth
- Irrigation Potential
- Notable Sector Trends
- Key Government Programmes
- Funding Sources & Expenditure Trends
- Type of Irrigation Systems
- Industry Structure and Major Players
- Issues & Challenges

## 2. WATER DEMAND AND SUPPLY SOURCES .....

- Demand for Water
- Water Availability & Sources
- Recycle and Reuse Practices
- Water Supply-Demand Gap
- Irrigation Demand Outlook

## 3. IMPACT OF COVID-19 ON IRRIGATION SECTOR .....

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- Impact on Project Delivery
  - Ongoing Projects
  - New Bids/Tenders
- Impact on Labour and Raw Material Availability
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- Capex Plans of Major Players
- Relief Measures for Irrigation Sector
- Key Recommendations based on Industry Interactions

## 4. RECENT DEVELOPMENTS (in the past 12 to 18 months) .....

- Regulatory Developments
- New Standards and Norms
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## 5. PROJECT PIPELINE AND ANALYSIS .....

- Project Pipeline by
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  - Stage of Development
  - Type of Project (Major, Medium and Minor)
  - Completion Period
- Expected Capacity Addition
- Top 50 Upcoming Projects

## 6. FUTURE OUTLOOK AND OPPORTUNITIES .....

- Key Growth Drivers
- Short-term and Long-Term Sector Outlook
  - Investment Requirements
- Market Opportunities
  - EPC Contractors
  - Pumps Manufacturers
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## 7. UPDATE ON KEY GOVERNMENT PROGRAMMES .....

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- Accelerated Irrigation Benefits Programme
- Bharat Nirman Programme
- Participatory Irrigation Management

- Interlinking of Rivers (ILR) Programme
- Command Area Development and Water Management
- Atal Bhujal Yojana (ABHY) - National Groundwater Management Improvement Program
- Dam Rehabilitation and Improvement Programme
- National Aquifer Mapping Program (NAQUIM)

For each of the programmes we will cover project scope, investment requirements, financing sources, current status, key completed and ongoing projects, upcoming tenders, targets and completion timelines, etc.

## 8. IRRIGATION TECHNIQUES AND TECHNOLOGY .....

- Current Deployment & Practices
- Key Irrigation Techniques (Drip, Sprinkler, Center Pivot, Pot)
- Focus on Micro Irrigation
- Notable Innovations and Advancements
- Future Outlook

## 9. EQUIPMENT MARKET TRENDS AND REQUIREMENTS .....

- Types of Equipment
- Pumps and Pumping Systems (Solar & Electric Pumps)
- Metering Practices
- Other Ancillary Equipment
- New Trends and Advancements
- Major Players
- Sourcing Options
- Segment Outlook

## SECTION II: STATE IRRIGATION PLANS AND INITIATIVES

## 10. PROFILES OF KEY STATES .....

This section will cover detailed profiles of states such as Andhra Pradesh, Bihar, Chhattisgarh, Gujarat, Haryana, Jharkhand, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Odisha, Punjab, Rajasthan, Uttarakhand, Tamil Nadu, Telangana, Uttar Pradesh and West Bengal

Each profile will give information on the following:

- Agriculture Overview
- Water Availability and Sources
- Irrigation Potential
- Irrigation Schemes and Programmes
  - Key Completed Projects
  - Key Ongoing Projects
  - Key Upcoming Projects
- Recent Developments & Initiatives
- Type of Projects (Major, Medium and Minor)
- Cost Structure and Water Tariffs
- Key Funding Sources
- Irrigation Techniques & Practices
- New Trends and Advancements
- Irrigation Storage Systems
- Initiatives for Improving Water Use Efficiency
- Pipes and Pumping Systems
- Major Players
- Upcoming Contracts and Tenders
- Expected Capacity Addition
- Investment Requirements
- Future Outlook
- Issues and Concerns

## SECTION III: DATABASE OF KEY PROJECTS

The database is a compilation of upcoming projects (ongoing and planned) in the sector with details on scope, location, cost, capacity, funding sources, implementing agency, contractor (wherever available), current status, expected date of completion, etc.

The report is available in a PDF format

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- Current Status of Healthcare Infrastructure, Demand-Supply Gap, Trends in Expenditure, Industry Structure and Role of Private Sector, Recent Trends and Developments, Investment Needs and Requirements, Government's Plans and Progress, Issues and Challenges, Segment Outlook

**2. GOVERNMENT POLICIES, PLANS AND PROGRESS**

- Policy and Institutional Framework, Impact of GST, National Health Profile 2018, National Health Policy, 2017, National Health Mission, Ayushman Bharat, Other Key Government Programmes

**3. SECTOR OUTLOOK AND KEY PROJECTIONS**

- Growth Drivers
- Projected Healthcare Market Size
- Future Capacity and Investment Projections
- Sector Outlook

**4. PROJECT PIPELINE AND MARKET OPPORTUNITIES**

- Pipeline Analysis: By Ownership, By Category, By Location, By Status
- Market Opportunities in Key Segments, AI and Machine Learning, Data Analytics, mHealth and digital pharmacies, Telemedicine, Medical Tourism, Medical Device and Equipment, Diagnostics, Health Insurance

**5. INVESTMENT EXPERIENCE**

- Healthcare Spending Trends,
- Private Investment and Role of PPPs
- Emerging Business Models
- Financing Trends: Debt Funding, Private Equity Deal Scenario, Private Equity Exits, Venture Capital Funding Scenario, Recent IPOs, Mergers and Acquisitions, FDI Inflow
- New and Innovative Funding Sources
- Role of Global Investors
- Risks and Returns
- M&A Opportunities
- Investment Outlook

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**6. HOSPITALS**

- Growth in the Past Few Years, State-level Initiatives, Recent Trends, Key Completed Projects, Expected Capacity Addition, Future Investment Requirement, Top Upcoming Projects, Issues and Challenges, Future Outlook and Opportunities

**7. SUPER SPECIALTIES AND MEDICINES**

- Growth in the Past Five Years, Key Completed Projects, Case Studies, Top Upcoming Projects, Segment Outlook, Market Opportunities

**8. DIAGNOSTICS AND PATHOLOGY CENTRES**

- Segment Overview, Key Trends and Financings, Growth in Private Spending, Key Players, Top Upcoming Projects, Market Opportunities

**SECTION III: EQUIPMENT AND INSURANCE MARKET: PROGRESS, OPPORTUNITIES AND PROJECTIONS**

**9. MEDICAL DEVICE AND EQUIPMENT INDUSTRY**

- Market Size and Growth, Growth Drivers, Key Players, Types of Medical Devices and Equipment, Upcoming Medical Equipment Manufacturing Projects, Market Projections for Key Medical Equipment (Till 2024-25), Industry Outlook

**10. HEALTH INSURANCE**

- Evolution of Health Insurance
- Insurance Penetration: Industry-level Analysis, Trends in Life, Non-life and Industry
- Growth in Number of People Covered Under Health Insurance
- Health Insurance Premium Trends
- Gross Premium Written
- Incurred Claims Ratio
- Key Players
- Market Composition - Trends in Public, Private and Standalone Health Insurance
- Impact of National Health Protection Scheme
- State-level Initiatives
- Recent Trends and Developments
- Issues and Challenges
- Outlook and Future Prospects

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**11. ARTIFICIAL INTELLIGENCE: POTENTIAL AND OPPORTUNITIES**

- The Experience So Far, Recent Investments in the AI Domain, Key Applications, Machine Learning Technologies and Their Impact, Expected Impact on Healthcare Landscape, Key Technology Providers, Potential Barriers, Key Opportunity Areas, Future Prospects

**12. DATA ANALYTICS IN HEALTHCARE**

- Technology Penetration, Key Case studies, Upcoming Opportunities, Major Players, Key Issues and Challenges, Future Potential and Prospects

*This chapter covers the following technologies - IoT, Big Data, Cloud, Robotics and Process Automation, Blockchain, and other technologies such as 3D Printing, Augmented and virtual reality, etc.*

**13. HEALTHCARE PLATFORMS & APPLICATIONS: MHEALTH & DIGITAL PHARMACIES**

- The Experience So Far, Growth Drivers, Role of Healthcare Startups, mHealth: Progress and Experience, Potential for Digital Pharmacies, Future Outlook

**14. TELEMEDICINE IN HEALTHCARE DELIVERY**

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**OPINION AND INSIGHTS**

- Niraj Didwania, Head, Corporate Development and Investor Relations, Healthcare Global Enterprises
- Nitin Nag, Regional Director (South), Cloudnine Group of Hospitals
- Dr. Nitiraj Gandhi, Senior Manager, Business Advisory Services, EY
- Dr. Kirti Chadha, Senior Vice President - GRL Operations and Medical Affairs, Metropolis Healthcare
- Dr. Manjiri Bakre, CEO and Founder, OncoStem Diagnostics
- Nitin Sisodia, Founder and CEO, Sohum Innovation Lab
- Arun Agarwal, Founder, Janitri Innovations

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*Each profile gives an overview of the company's operations, key contracts, recent collaborations, joint ventures, and future plans and strategies.*

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- Water and Sanitation

Each of the sectors covers:

- Size and Growth, Emerging Trends and Recent Developments, Proposed Investments, Upcoming Projects, Market Opportunities, Issues and Challenges, Future Outlook

*The report is available in a PDF format.*



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