Gas in India 2017
Sector Overview and Outlook: E&P, LNG, Pipelines and CGD

- Report (PDF)
- Data-set (Excel)
1. Executive Summary

SECTION I: SECTOR OVERVIEW AND OUTLOOK

2. Overview
   - India's Energy Mix
   - Gas Demand-Supply Dynamics
   - Key Trends
   - Growth Drivers
   - Upcoming Opportunities and Investment Requirements
   - Issues and Concerns
   - Sector Outlook

3. Recent Industry Developments
   - The Firsts in the Past One Year
   - Union Budget 2017-18: Announcements and Impact
   - New Discoveries
   - Revisions in Domestic Gas Price
   - New Authorisations to CGD Players
   - Recent LNG Contracts
   - Auctioning of Discovered Small Fields
   - Others

SECTION II: FOCUS ON NEW POLICY DEVELOPMENTS

4. Open Acreage Licensing Policy
   - Key Features
   - Types of Contracts under OALP
   - Pre-Qualification and Bid Evaluation Criteria
   - Action Plan and Implementation Timeline
   - Expected Impact on the Gas Industry
   - Key Challenge

5. National Data Repository
   - Salient Features
   - Objectives/Goals
   - Operational Model
   - Data Disclosure Timeline
   - Data Population Status
   - Technology for NDR
   - Key Benefits
   - Issues and Challenges

6. Discovered Small Fields (DSF)
   - Key Features of Discovered Small Fields Policy, 2015
   - Experience of Bidding Round I
   - Contracts Awarded
   - Expected Production
   - Bidding Round II - Fields Identified and Timelines
   - Risks and Concerns
   - The Way Forward

7. Other Key Policy Initiatives
   - Hydrocarbon Exploration and Licensing Policy
   - Policy on Marketing and Pricing Freedom for New Gas Production from Deepwater
   - Ultra Deepwater and High Pressure-High Temperature Areas
   - Policy on Marketing and Pricing Freedom for Coal-Bed Methane Production
   - National Seismic Programme

SECTION III: MARKET DYNAMICS: DEMAND, SUPPLY, PRICING

8. Demand Analysis and Projections
   - Gas Consumption Trends
   - Industry-wise Offtake of Natural Gas
   - Domestic Gas Allocations
   - Demand Analysis of Key Consuming Sectors
   - Growth Drivers
   - Constraining Factors
   - Supply Outlook and Projections (till 2024-25)

9. Supply Analysis and Projections
   - Gas Production Trends
   - Key Sources of Domestic Gas Supply
   - LNG Imports Trends
   - Sources of Unconventional Gas
   - Growth Drivers
   - Constraining Factors
   - Supply Outlook and Projections (till 2024-25)
   - Expected Production from Existing Acreages
   - Expected Production from New Acreages

10. Pricing Trends
    - Structure of New Gas Pricing
    - Domestic Gas Pricing
    - Recent Price Revisions
    - Impact on E&P Industry
    - Impact on Key Consuming Segments
    - CBM Pricing
    - LNG Spot Prices
    - Pricing Outlook

SECTION IV: EXPLORATION AND PRODUCTION INDUSTRY

11. E&P Scenario
    - Sedimentary Basins
    - India's Gas Reserves
    - Exploration Trends
    - Current Exploration Expenditure
    - Government Initiatives to Promote E&P
    - Likely Impact of Key Policy Developments
    - Hydrocarbon Discoveries in 2016-17
    - Update on NELP Rounds
    - New Revenue Sharing Model
    - Drilling/Exploration Targets
    - Key Issues and Challenges
12. Competitive Landscape
   - Major Players
   - Recent Mergers and Acquisitions
   - ONGC Limited
   - Oil India Limited
   - Reliance Industries Limited
   - Cairn India Limited
   - Essar Oil Limited
   - Hindustan Oil Exploration Company Limited
   - BP

Each company profile covers details on operational performance, financial performance, recent developments and future expansion plans.

13. Coal Bed Methane
   - CBM Reserves
   - Production Trends
   - Review of Bidding Rounds
   - Marketing and Pricing Freedom for CBM Production
   - Challenges in Developing CBM Blocks
   - Major Players
   - Production Outlook

14. Shale Gas Prospects
   - World Shale Gas Reserves
   - Indian Shale Gas Reserves
   - Shale Gas Policy
   - Shale Gas Exploratory Drilling Plan for NOCs and Progress So Far
   - Initiatives undertaken by Major Players
   - Key Developments in 2016-17
   - Issues and Concern

SECTION V: LNG MARKET TRENDS AND DEVELOPMENTS

15. Existing LNG Infrastructure
   - Existing Terminals
   - Pipeline Connectivity
   - Major Players
   - Expansion Plans at Existing Terminals

16. Pricing Dynamics and Negotiations
   - Global Price Trends
   - Recent Spot Price Trends
   - Impact on LNG Industry
   - Contract Renegotiations
   - Global LNG Price Forecasts

17. LNG Import Options
   - LNG Import Trends
   - Current Sourcing Options
   - Key Long Term contracts of India
   - Spot Contracts
   - Potential LNG Import Sources
   - Future Outlook

18. Upcoming LNG Infrastructure
   - Expected Capacity Addition
   - Under Construction LNG Terminals
   - Proposed/Announced LNG Terminals

SECTION VI: UPDATE ON PIPELINE INFRASTRUCTURE

19. Network Size and Growth
   - Current Status of Pipeline Connectivity
   - Existing Pipeline Network and Capacity
   - Major Players/Operators
   - Policy and Regulations
   - Key Issues and Challenges

20. Upcoming Pipeline Connectivity Projects
   - Growth Drivers
   - Proposed/Upcoming Pipeline Connectivity Projects
     - Domestic
     - Transnational
   - Investment Requirements

SECTION VII: CITY GAS DISTRIBUTION MARKET

21. Market Size and Growth
   - Current Network Size and Growth
   - Key Consumer Segments
   - Growth in Network- By State
   - Growth in Network- By Operator
   - Sales by Key CGD Players
   - Growth Drivers
   - Key Constraining Factors

22. Licensing Rounds and Bidding Experience
   - Status of First Six Rounds
   - Update on the 7th and 8th Rounds
   - Grant of Authorisations under the Seven Bidding Rounds
   - Progress under Authorised GAs
   - Amendments in Bidding Criteria
   - Recent Aggressive Bids
   - Trends in Network and Compression Charges
   - Key Issues and Challenges

23. Market Opportunities in Upcoming GAs
   - Upcoming GAs Under the 7th and 8th Rounds
   - GAs yet to be Authorised under the Previous Bidding Rounds
   - Investment Projections
   - Opportunities for CGD Players
   - Opportunities for Service Providers (CNG stations, piping, compression equipment, transportation, etc.)

Release Date: November 23, 2017  |  No. of slides: 297
# List of Tables and Figures

## List of Tables

- Hydrocarbon Discoveries by ONGC during 2016-17
- Authorisations Granted by PNGRB in the last 18 months year (May 2016-October 2017) - CGD Bidding Round 6
- Minimum Network Criteria for Petroleum Operations Contract
- Minimum Technical Qualifying Criteria for Petroleum Operations Contract
- Bid evaluation criteria for Reconnaissance contract: Work programme (WP) and data price
- Data Assimilation under National Data Repository
- Data Disclosure Timeline for National Data Repository
- Contracts Awarded under DSF Bid Round I
- DSF Bidding Round II - Details of Discoveries
- Industry-wise Offtake of Natural Gas in India (bcm)
- State/Sector-wise Domestic Natural Gas Allocation of APM Gas (mmcmd)
- State-wise Distribution of Natural Gas Production (mcm)
- Projected Total Domestic Gas Supply (mmcmd) and Share of Blocks
- Projected Gas Supply from existing acreages
- Indicative List of New Acreages
- India's Long Term LNG Contracts
- Gas Reserves as of April 1, 2016 (in bcm)
- Operator-wise Exploratory Work under PSC Regime
- Exploratory Inputs by ONGC and OIL as on January 1, 2017
- 12th Five Year Plan Outlay and Actual Expenditure for P&NG Sector (Rs billion)
- Exploration Blocks Awarded under Nine Rounds of NELP
- Investments under Nine Rounds of NELP (USD million)
- New Projects Approved in 2016-17 (ONGC)
- BP's Natural Gas Production (In million cubic feet per day)
- Block-wise Estimated CBM Reserves
- Block-wise CBM Production (in mmcmd)
- Status of CBM Blocks
- Shale Gas Resource Estimates by Various Agencies in the Indian Sedimentary Basins
- Properties of Shale Gas Resources in India
- Existing LNG Terminals in India
- Capacity Expansion Plans of Existing LNG Terminals (mtpa)
- Trend in India's LNG Imports ? By Supplier Country
- Key Long-Term LNG Contracts
- Indian Spot/Short Term LNG Trade (mt)
- Top 10 LNG Exporters across the Globe
- Key Under Construction and Planned/Proposed LNG Terminals in India
- Operational Natural Gas Pipelines in India (as of March 31, 2017)
- Notified Regulations for Natural Gas Pipeline
- Under- Implementation section of Existing Operational Pipeline Networks
- Key Under Construction Pipelines- Project-wise
- Key upcoming Natural Gas Pipeline Projects
- Key GAIL's upcoming Natural Gas Pipeline Projects
- Key Under Construction Pipelines- Transnational
- State-wise CNG Sales Volume (In tmt)
- Growth in the Number of CNG stations (2011-2017)
- Growth in CNG Vehicles Served by Key CGD Players (2012-2017)
- Player-wise Growth in PNG Network between 2012-17 (km)
- Category-wise PNG connections (As of September 2017)
- Growth in PNG Customers of Key CGD Players (2012-2017)
- Average Gas Sales of Key CGD Players (mmcmd)
- Status of First Bidding Round
- Status of Second Bidding Round
- Key Details of CGD Bid Round 3
- Additional Bond Amounts Submitted by Winning Bidders (Rs million)
- Key Details of CGD Bid Round 4
- Key Details of CGD Bid Round 5
- Key Details of CGD Bid Round 6
- Key Details of CGD Bid Round 7
- Key Details of CGD Bid Round 8
- Work Status of Recently Authorised GAs
- Opportunities in CGD Bid Round 7
- Opportunities in CGD Bid Round 8
- Opportunities in Second and Third Bidding Round
- Opportunities in Fourth Bidding Round
- Opportunities in Fifth Bidding Round
- Opportunities in Sixth Bidding Round
- Expected Investment requirements for CGD Projects
- Investment opportunity in all CGD Bid Rounds
- List of Acronyms

## List of Figures

- Fuel-wise Primary Energy Consumption in 2016 (mtoe, %)
- India's Natural Gas Consumption (bcm)
- Trend in Natural Gas Demand and Supply (mmscmd)
- Trend in Natural Gas Consumption and Domestic Production (mmscmd)
- Share of Public and Private/JV Companies in Total Gross Production (%)
- Trend in Gross Natural Gas Production (mmscmd)
- Trend in Natural Gas Consumption (mmscmd)
- Trend in LNG Imports (mmscmd)
- Trend in Domestic Natural Gas Price ($ per mmBtu)
- YoY Growth in Natural Gas Price ($ per mmBtu)
- Domestic Natural Gas Price ($ per mmBtu)
- Gas Price Ceiling ($ per mmBtu)
- Data Population Status as of November 2017 (In million)
Data Population Status as of November 2017 (In thousands)
DSF Bidding Round I Response
DSF Bidding Round I - Bidders Profile (% Share)
Bids Received in Successive Rounds of Auctions
Administratively Fixed Domestic Gas Prices ($/mmBtu)
Henry Hub Natural Gas Spot Prices ($/mmBtu)
Domestic Gas Price Ceiling vs. Fixed Price ($/mmBtu)
Data Availability on Sedimentary Basins
Gas Consumption Trends from 2012-13 to 2016-17 (bcm)
Gas Consumption during April-September 2017 (mmscm)
Power sector share of total natural gas consumption (%)
Fertiliser sector share of total natural gas consumption (%)
Number of PNG connections (million)
CGD sector share of total natural gas consumption (%)
CNG Sales (thousand million tonnes)
Refineries’ share of total natural gas consumption (%)
Natural gas demand projections
Trend in Natural Gas Supply (bcm)
Annual Net Natural Gas Production in India (bcm)
Offshore and Onshore Gas Production (mcm)
State-wise Distribution of Onshore Production (%)
Regime wise balance recoverable reserves of gas (bcm)
Player wise Gas Production (bcm)
Trend in LNG Imports in India (bcm) and Share of Spot in Imports (%)
LNG Imports by Source - 2016 (%) 
CBM Production (mcm) and Share in Total (%)
Estimated CBM Resources in India (bcm)
Identified Shale Gas Blocks in India by State
Shale Gas Blocks by Basin / Company
Gas Price Ceiling for New Gas (up to March, 2018)
Domestic Fixed Gas Prices (up to March, 2018)
Recent Price Revisions (% Change)
Key Consumers of Natural Gas (mmscmd / %)
Fertilizer and CGD Segment Growth (2013-2016)
Natural Gas Spot Prices Globally
Major Sedimentary Basins in India (million sq km)
Category-wise Area of Sedimentary Basins (% share)
Company-wise Balance Recoverable Reserves as of April 1, 2017
Area/State-wise Balance Recoverable Reserves as of April 1, 2017
Trend in E&P Expenditure (Rs billion)
ONGC’s Trend in Gas Production (In bcm)
ONGC’s Financial Performance between 2013-17 (Rs billion)
Trend in Gas Production for OIL (In mmscm)
OIL’s Financial Performance between 2013-17 (Rs billion)
Financial Performance between 2013-17 (Rs billion)
Cairn India’s Financial Performance (Rs billion)
Essar Oil’s Financial Performance (Rs billion)
HOECL’s Financial Performance (Rs million)
BP Financial Performance (Rs million)
State-wise Estimated CBM Resources (bcm)
Year-wise CBM Production (in mmscm)
Review of four CBM Bidding Rounds
CBM Production Projections till 2025
Global Shale Gas Reserve Potential (tcf)
Capacity Utilisation Rate at LNG Terminals during 2014-2018 (%) 
Capacity Expansion Plans of Existing LNG Terminals (mtpa)
Natural Gas Price Trend across Major Global Indices
Trend in Spot LNG Prices
Total LNG Imports (Long-term and Spot) (mnt)
Key LNG Exporters to India as of 2016 (% share)
Spot and Short-term LNG Quantities Imported by India from Various
Countries (‘000 tonnes)
Operator’s Share of Pipeline Length (total: 16,462.41km)]
Operator’s Share of Pipeline Capacity (total: 387.31 mmscmd)
Natural Gas Pipeline Projects Under Implementation (as in July, 2017 )
Operator’s Share of Under-Implementation Pipeline Length (14,489 km)
Operator’s Share of Under-Implementation Design Capacity (545.26 
mmscmd)
State-wise number of CNG vehicles (as of September 2017)
Growth in CNG Stations of Key CGD Players (2014-17)
Category-wise PNG connections as of September 2017
State-wise PNG connections as of September 2017
Average Gas Sales of Key CGD Players (mmscmd)
Authorisations granted by PNGRB over the years (January-December each
year)
Tariff and Compression Charges Bid in Rounds 4-6 (Rs)
Network Tariff and Compression Charges Bid by Authorised Companies
under Different Bidding Rounds (Rs)
Capital Expenditure Break-up for CGD Projects
Short term and long term Investment requirements
Opportunities for Service Providers
I would like to purchase the “Gas in India 2017” report:

<table>
<thead>
<tr>
<th>Format (PDF)</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Site Licence (Single Location)</td>
<td>Rs 75,000</td>
</tr>
<tr>
<td>GST @ 18%</td>
<td>Rs 13,500</td>
</tr>
<tr>
<td>Total</td>
<td>Rs 88,500</td>
</tr>
<tr>
<td>Enterprise Licence (Multiple Locations)</td>
<td>Rs 112,500</td>
</tr>
<tr>
<td>GST @ 18%</td>
<td>Rs 20,250</td>
</tr>
<tr>
<td>Total</td>
<td>Rs 132,750</td>
</tr>
</tbody>
</table>

I am enclosing a cheque/demand draft for Rs ________________________, vide cheque/demand draft no. ______________________ drawn on ____________________ dated ________________ in favour of “India Infrastructure Publishing Pvt. Ltd.”

Signature

Name (Block Letters) __________________________________________
Designation _________________________________________________
Company _____________________________________________________
Company GST No. _____________________________________________
Mailing Address _____________________________________________
Telephone ______________________________________ Mobile
E-mail ______________________________________________________

**Wire transfer details:**

**Beneficiary**: India Infrastructure Publishing Pvt. Ltd.
**Bank Name**: The Hongkong and Shanghai Banking Corporation Ltd
**Bank Address**: R-47, Greater Kailash-1, New Delhi - 110048
**Account No.**: 094179587002
**Swift Code**: HSBCIN88
**IFSC Code**: HSBC0110006
**GSTIN**: 07AAACI5880R1ZV

**Contact details:**

**Priya Sen**
Information Products
India Infrastructure Publishing Pvt. Ltd.
B-17, Qutab Institutional Area, New Delhi 110016, India
Tel: +91-11-4579 8613, 41034600, 41034601; Fax: +91-11-26531196
Mobile: +91-99 00 644 996
Email: priya.sen@indiainfrastructure.com