



# Expanding Horizon Transmitting Smiles





# **Sustainable Energy Transition through Natural Gas**

The Bengal Chamber of Commerce and Industry (BCC&I)

23.08.2018



# Agenda

- Natural Gas in Energy Sector
- GAIL's presence in Gas Value Chain
- City Gas Distribution Project-An Overview
- City Gas Distribution Project in West Bengal
- Support Provided by Govt.
- Way Forward and Support Required

# Natural Gas

## ... Greener, Economical and Convenient Fuel



19<sup>th</sup> CENTURY - COAL

20<sup>th</sup> CENTURY - OIL

21<sup>st</sup> CENTURY - GAS

### Emission Table of Various fuels:

Emission (Gms per 100 Km)	CO <sub>2</sub>	UHC	CO	NO <sub>x</sub>	SO <sub>x</sub>	SPM
Petrol	22,000	85	634	78	8.3	11.1
Diesel	21,000	21	106	108	21	12.5
CNG	16,275	5.6	22.2	25.8	0.15	0.29
% Reduction (CNG Vs. Petrol)	26%	93%	96%	67%	98%	74%
% Reduction (CNG Vs. Diesel)	23%	73%	79%	76%	99%	98%

# Sustainable Environment & Urbanization

66%

Of the world's population is predicted to be urban by 2050

31%

Of India's current population lives in urban areas

40%

Of India's population will be in Urban areas by 2030

Urbanization

Rise in Energy Consumption

Increased Emission



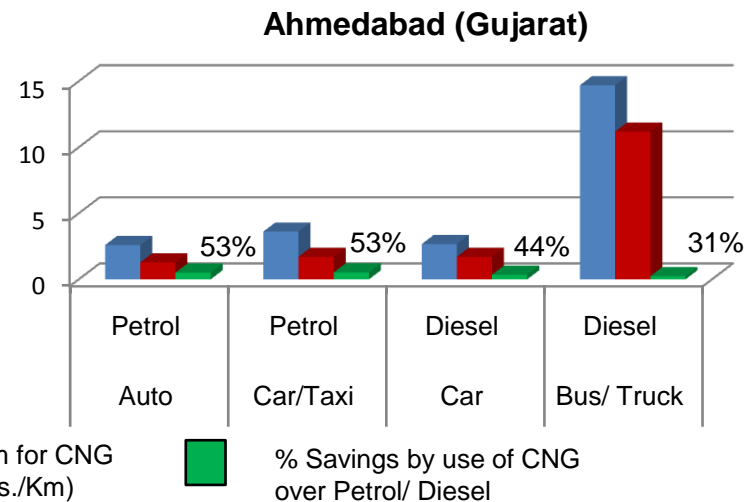
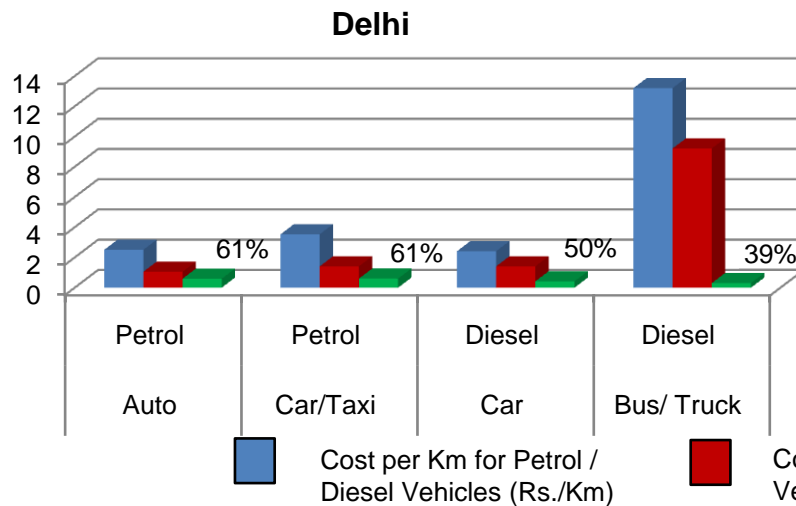
Environment Degradation



Use of Natural Gas

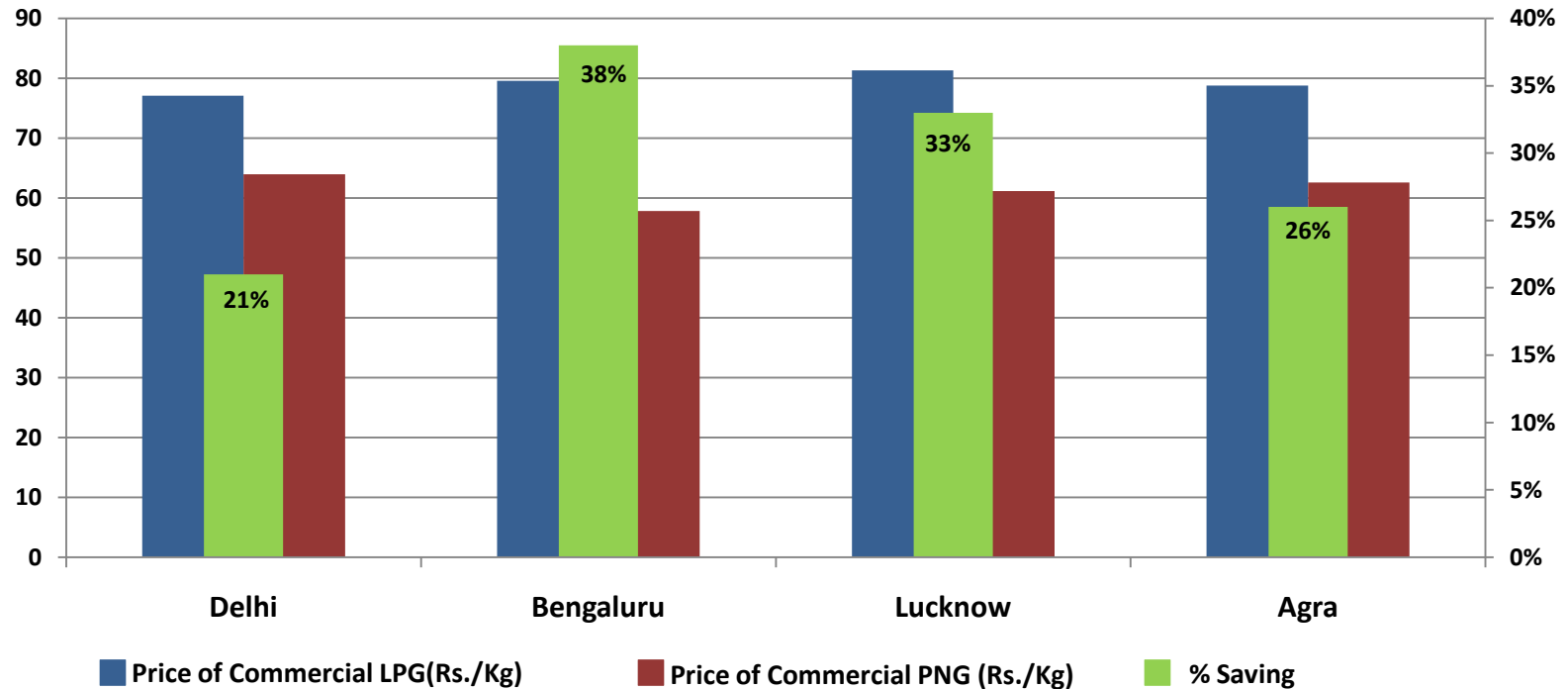
Economical and Sustainable Environment

# Cost Economy of CNG over Petrol / Diesel



Particulars	Delhi-NCR	Gujarat
No. of Registered Vehicles (Excluding 2 Wheelers )	~37 Lakhs	~50 Lakhs
No. of CNG run vehicles	10.32 Lakhs	9.34 Lakhs
No. of CNG Stations	438	458

# Cost Economy of PNG over LPG (Commercial Segment)



## Energy Consumption - Comparison

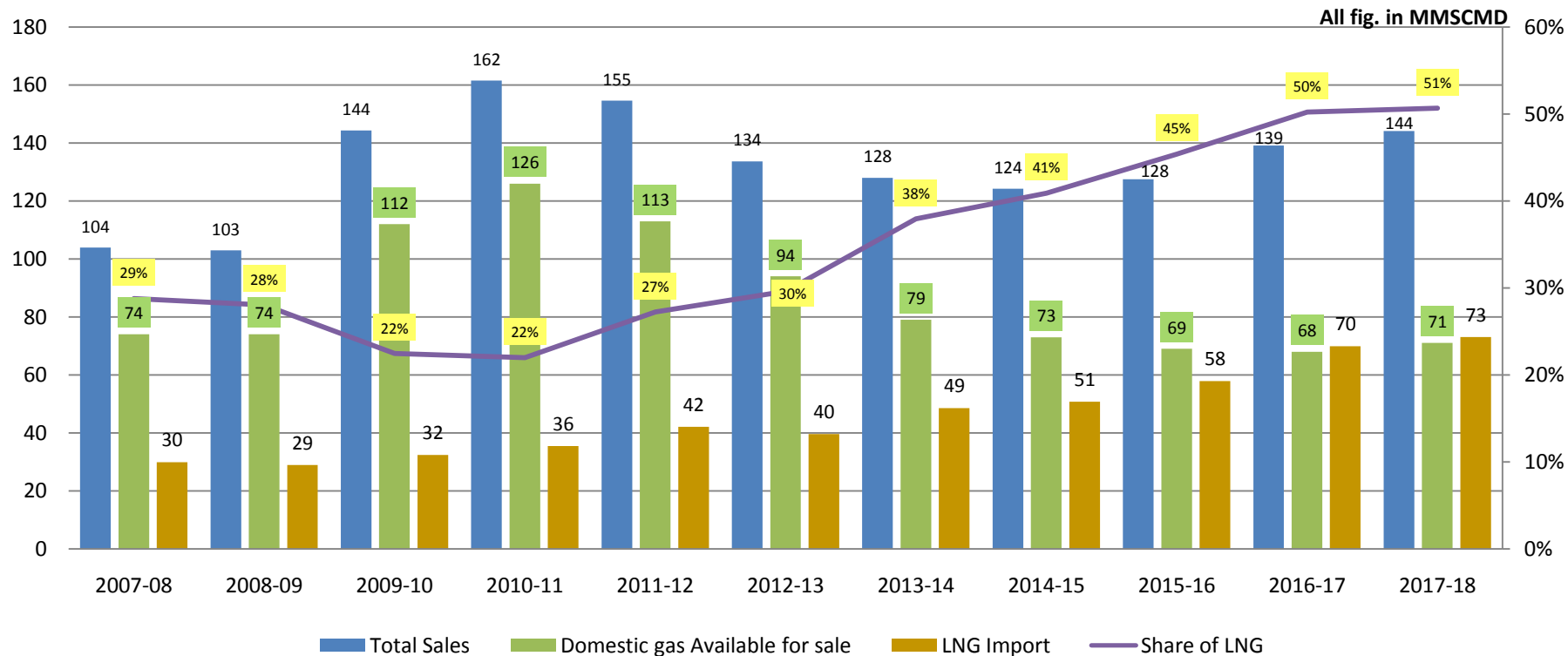
Region	Oil	Natural Gas	Coal	Nuclear Energy	Hydro electric	Renewables
World	34.2%	23.3%	27.6%	4.4%	6.8%	3.6%
Asia Pacific	28.6%	11.5%	48.4%	1.9%	6.5%	3.0%
China	19.4%	6.6%	60.4%	1.8%	8.3%	3.4%
India	29.5%	6.2%	56.2%	1.1%	4.1%	2.9%

(Source: BP Statistical World energy Review, 2018)

**Both India & China are in the process of diversifying the primary energy mix and increasing share of cleaner natural gas & renewables.**



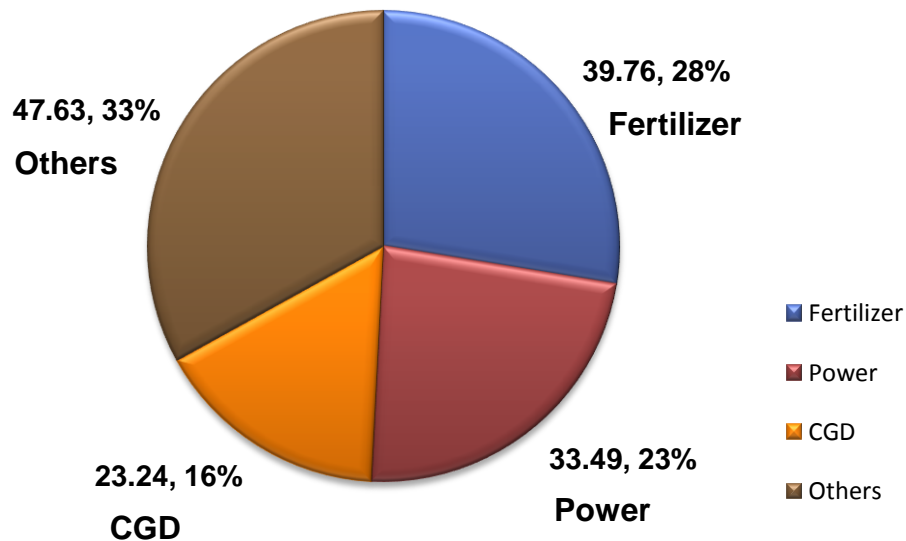
# India - Gas Production vs. Sales



LNG consumption has increased but price affordability is still a challenge for Indian Gas market

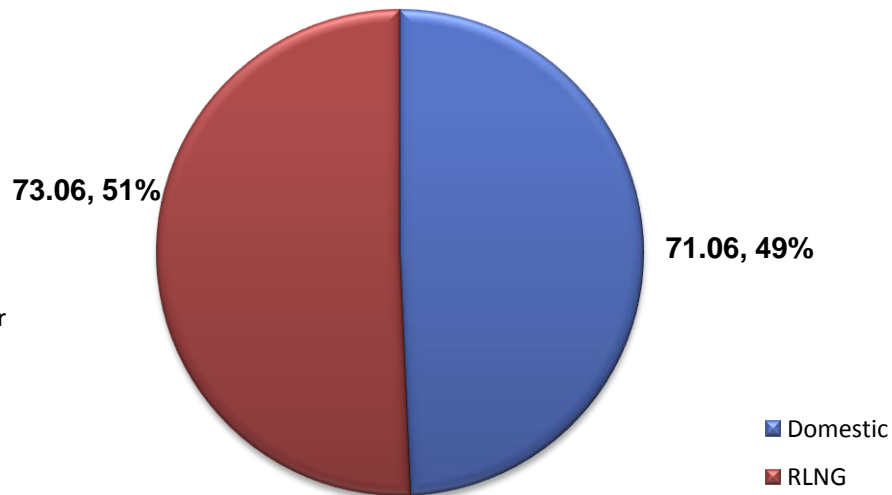
# Natural Gas Consumption Pattern - India (2017-18)

Sector-wise Break-up



Gas-wise Break-up

Volume in MMSCMD



Gas consumption during FY (2017-18), ~144 MMSCMD

*Power and Fertiliser - Anchor Markets*  
*Industrial and City Gas - Growing Markets*

# Investments planned in Gas Sector



## Gas Pipelines

**Rs. 70,000 Cr.**

- Existing pipeline length: 16877 KM
- Planned for national gas grid: 30000 KM



## Gas Based Fertilizers

**Rs. 30,000 Cr.**

- 4 revival units,
- 1 expansion unit,
- 1 greenfield unit



## City Gas Distribution

**Rs. 70,000 Cr**

- 97 existing cities
- 86 GAs(174 Distt.) being awarded currently
- 7 cities under Urja Ganga Project



## Gas Import Infrastructure

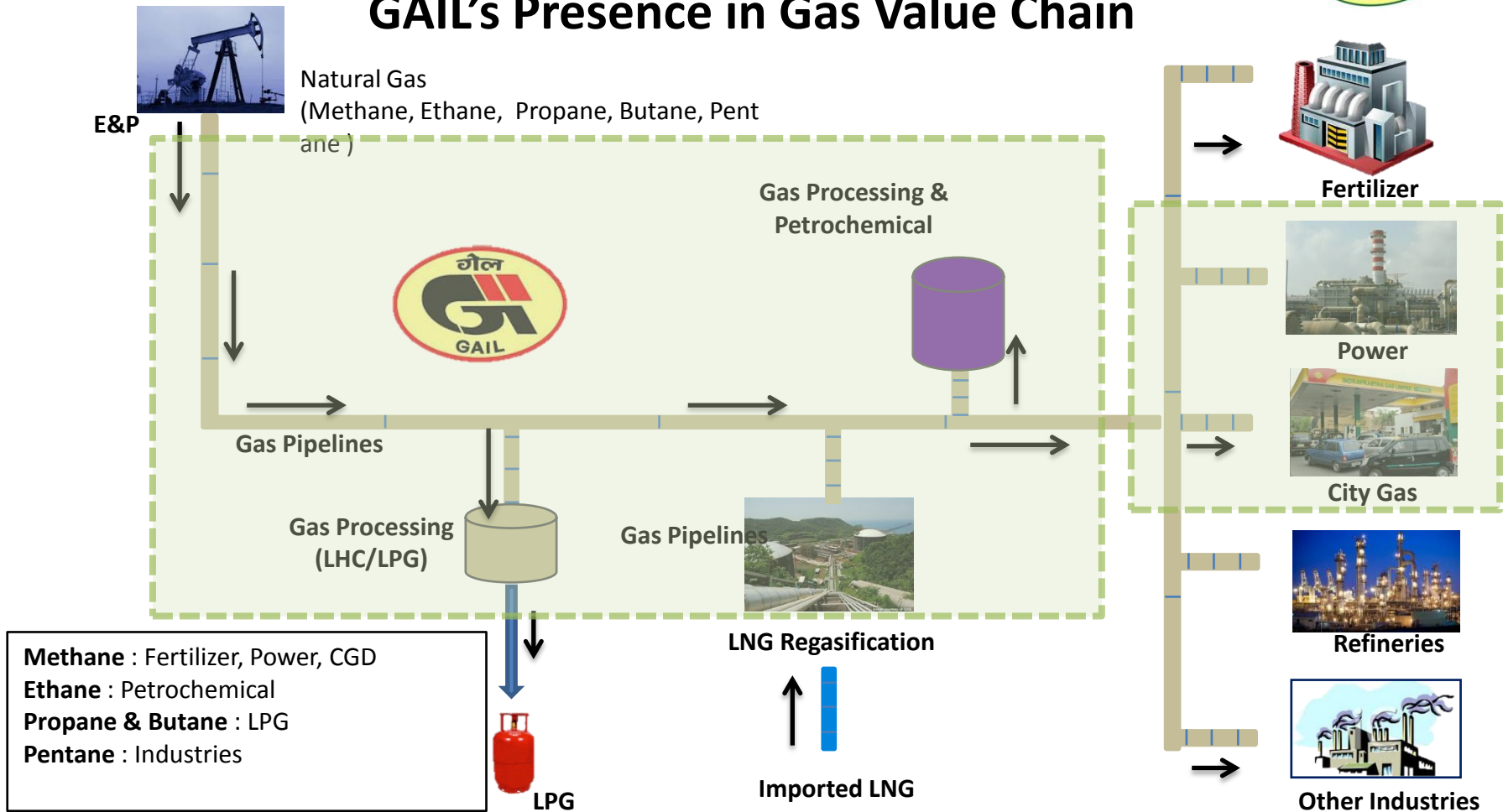
**Rs. 20,000 Cr.**

- Existing gas import capacity: 30 MMTPA
- Enhancement up to 50 MMTPA

**Rs. 200,000 Crores of investment planned in Gas Sector**

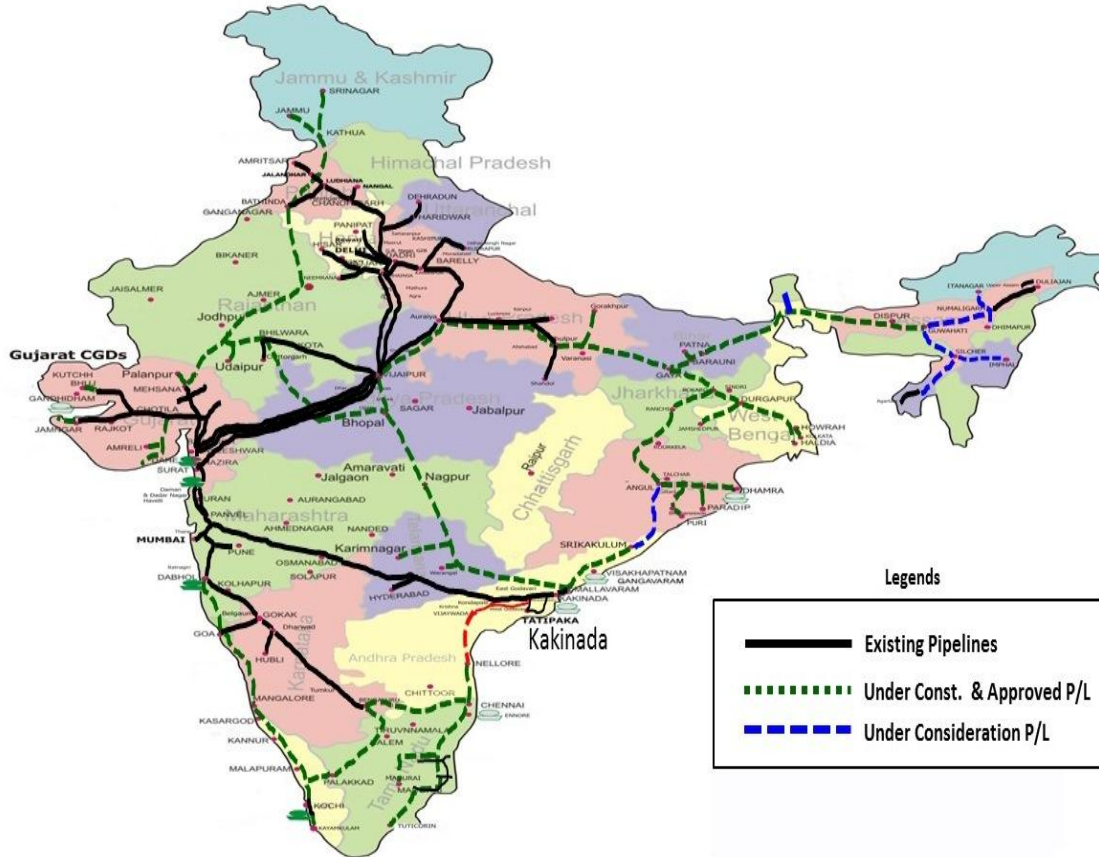


# GAIL's Presence in Gas Value Chain





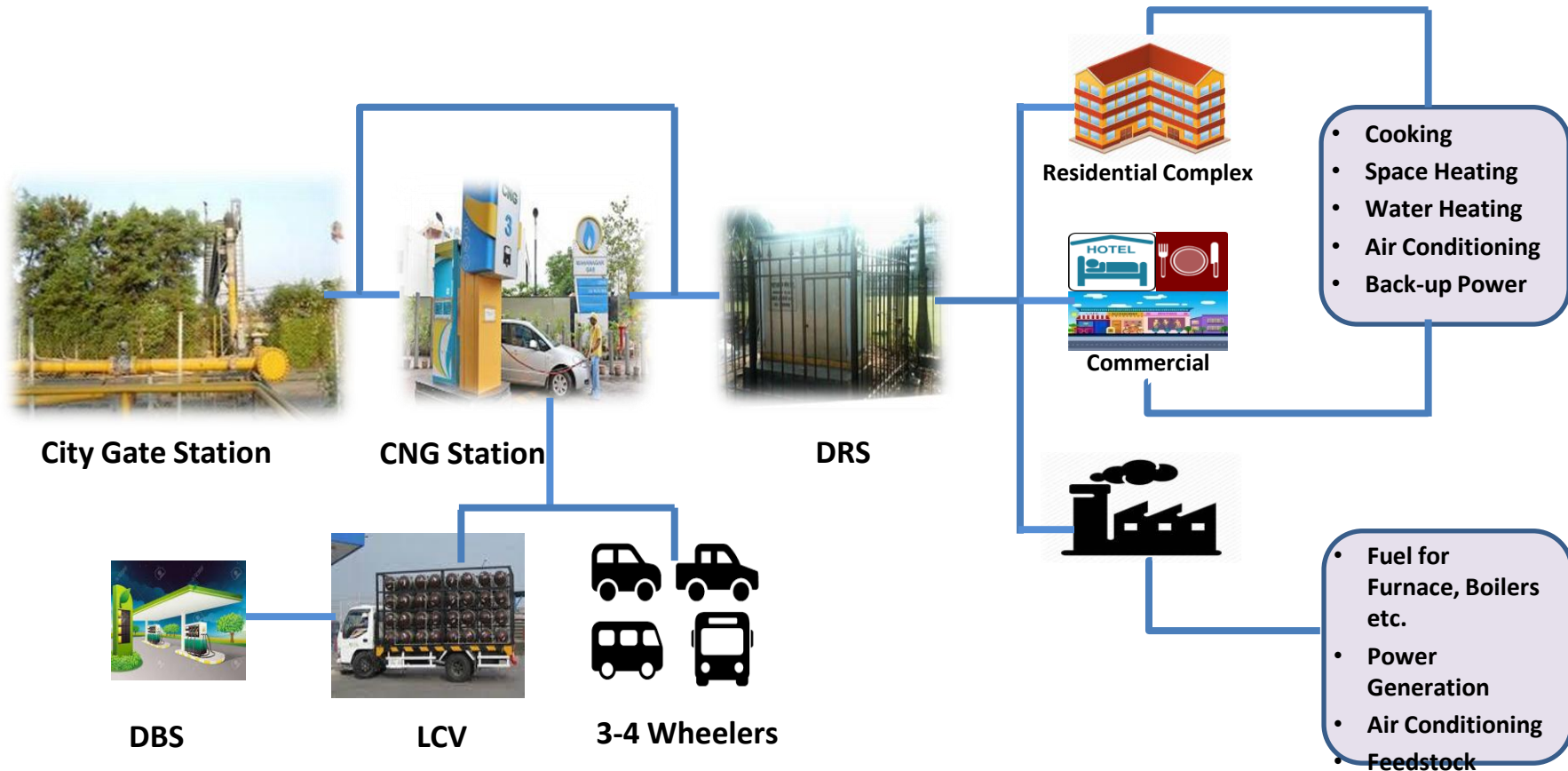
# Gas Infrastructure and GAIL's Portfolio



Re-gas Capacity (in MMSCMD)	Existing	Upcoming
All India Re-gas capacity	95.4	110
GAIL Re-gas capacity	24.5 Dahej+Dabhol + Kochi	5.4 Dhamra

Pipeline Length (kms)	Existing	Upcoming & Auth.
All India P/L Length	16877	13060
GAIL P/L length	11167	4878

# CGD Value Chain





# CGD Sector- At a Glance

- CGD entities involved : 35 in 97 GAs in 23 State(s)/ UTs.
- GAIL's CGD Entities : 9 JVs and 1 Subsidiary in 38 GAs
- Urja Ganga : 6 CGD networks along JHBDPL by GAIL
- Present CGD Infrastructure in the Country

As on 30.06.2018

Particulars	PAN India Details	GAIL's CGD Entities / % of Total
PNG (Domestic)	44.43 Lakhs	25.66 Lakhs / 58%
PNG (Industrial & Commercial)	~ 34341	~11918 / 34%
CNG Stations	1446	918 / 63%
CNG Vehicles	~ 31.71 Lakhs	~21.02 Lakhs / 66%

Source: PPAC

- Gas consumption in CGD sector for FY 2017-18 : ~24 MMSCMD [Domestic Gas ~13 MMSCMD and R-LNG ~11 MMSCMD] (16.55% of Total Gas Consumption)



# CGD Sector-PAN India Trend

## Investment in CGD Sector

Financial Year	2013-14	2014-15 / Y-o-Y Change	2015-16 / Y-o-Y Change	2016-17/ Y-o-Y Change	2017-18/ Y-o-Y Change	2018-19/ Y-o-Y Change	CAGR
Amount (Rs. Cr.)	760.46	603.85 / -157	970.42 / 367	1120.73 /150	2059.81 / 939	4117 / 2057	28%

## DPNG Connections

Numbers (Lakhs)	25.42	28.69 / 4	31.69 / 3	36.08 / 4	43.10 / 7 (GAIL-5 Lakhs)	44.43 / 1.33	14%
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## CNG Stations

Numbers	966	1009 /43	1069 /60	1197 / 128	1381 /184 (GAIL-120)	1446 / 65	9%
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## Gas Volume

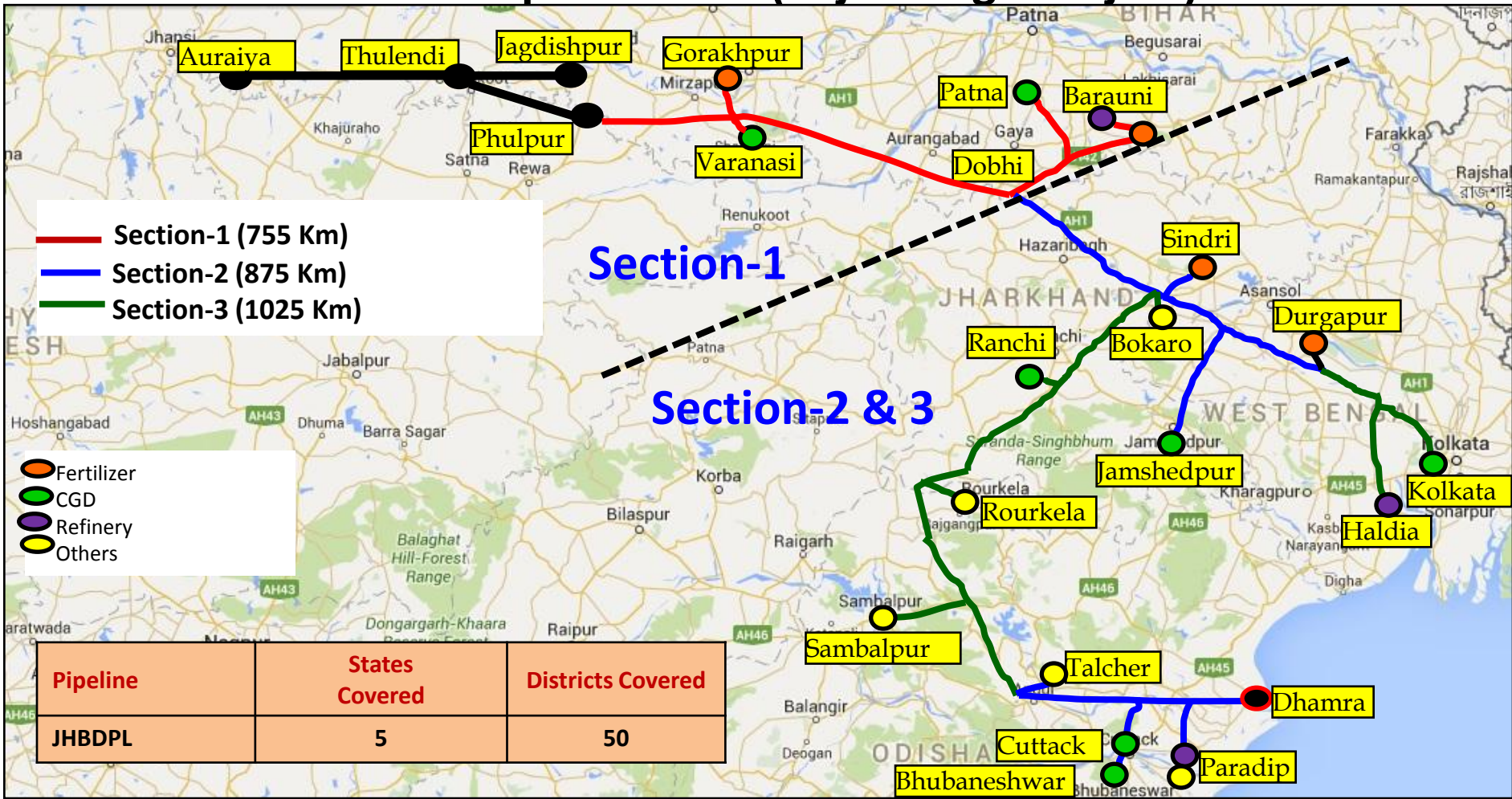
Gas Volume (MMSCMD)	15	16 / 1	18 / 2	20 / 2	24 / 4	28 (E) / 4	12%
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# **City Gas Distribution Project in West Bengal**

# Route Map – JHBDPL (Urja Ganga Project)



— Section-1 (755 Km)  
— Section-2 (875 Km)  
— Section-3 (1025 Km)

- Fertilizer
- CGD
- Refinery
- Others

Pipeline	States Covered	Districts Covered
JHBDPL	5	50

# Pollution levels in Indian Metros

Particulars	PM 2.5 ( $\mu\text{g}/\text{m}^3$ )			PM 10 ( $\mu\text{g}/\text{m}^3$ )		
	2015	2016	Growth	2015	2016	Growth
<b>City</b>						
<b>New Delhi</b>	123	143	16%	228	292	28%
<b>Kolkata</b>	52	74	<b>42%</b>	95	136	<b>43%</b>
<b>Mumbai</b>	66	64	-3%	105	104	-1%
<b>Bengaluru</b>	40	27	-33%	114	47	-59%
<b>Chennai</b>	54	52	-4%	70	80	14%

Source: <https://timesofindia.indiatimes.com/city/kolkata/kolkata-is-2nd-most-polluted-metro-air-quality-worsening-faster-than-delhis/articleshow/64007600.cms> , WHO Data

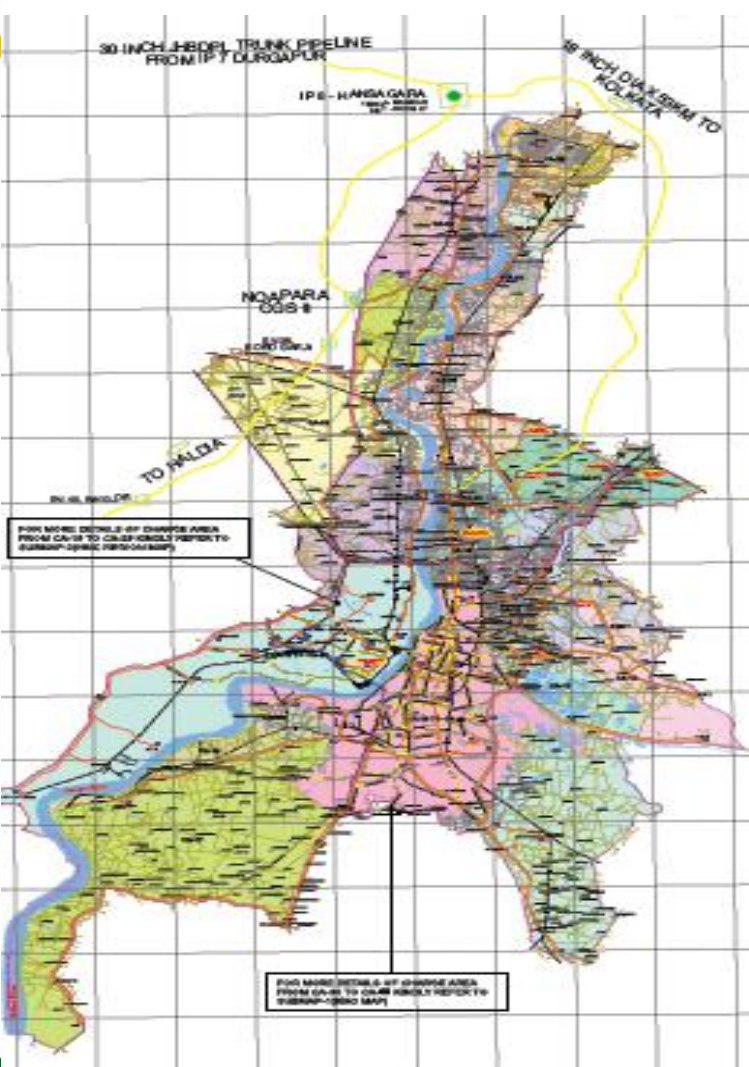
City	Air Quality Index (Jan-Feb 2018)
<b>Kolkata</b>	295
<b>New Delhi</b>	287
<b>Mumbai</b>	155
<b>Bengaluru</b>	88
<b>Chennai</b>	127
<b>Hyderabad</b>	130

Source: <http://emis.wbpcb.gov.in> (West Bengal Pollution Control Board),  
<http://indiaclimatedialogue.net/2018/04/06/kolkata-becomes-toxic-topper-in-poor-air-quality/>

## Bengal Gas Company Ltd.



- **Joint Venture Agreement executed between** Greater Calcutta Gas Supply Corporation Limited (GCGSCL) and GAIL India Ltd. on 24 July 2018
- Investments of over Rs. 5000 Cr. in next five years, and over Rs. 7000 Cr. planned in next 25 years



# Kolkata City Gas Distribution Project

## Kolkata Geographical Area

Population: 1.64 Crore  
 Area: 1529 Sq. Km.

## Areas to be covered

1. Kolkata Municipal Corporation
  2. Howrah Municipal Corporation
  3. North 24 Paraganas
  4. South 24 Paraganas
  5. Nadia Area
  6. Hoogly District
- } Part Distt.

## Project Milestones-25 Years

1. 150 CNG Stations
2. 16 Lakhs DPNG Connections
3. ~3 Lakhs CNG Vehicles
4. Gas Demand : ~5.7 MMSCMD



# Smart City Dashboard

Number of cities targeted : 110 (Initial : 98; 12 cities are added in 3<sup>rd</sup> Round)

Number of Smart Cities Selected : 99

S.No.	Smart City Rounds	Month & Year	Number of Cities Selected	No. of Cities authorized by PNGRB
1	1 <sup>st</sup>	Jan 2016	20	11
2	Fast Track	May 2016	13	7
3	2 <sup>nd</sup>	Sep 2016	27	13
4	3 <sup>rd</sup>	June 2017	30	8
5	4 <sup>th</sup>	Jan 2018	9	4
<b>Total</b>			<b>99</b>	<b>43</b>

# PNG – Smart Choice for Smart Cities



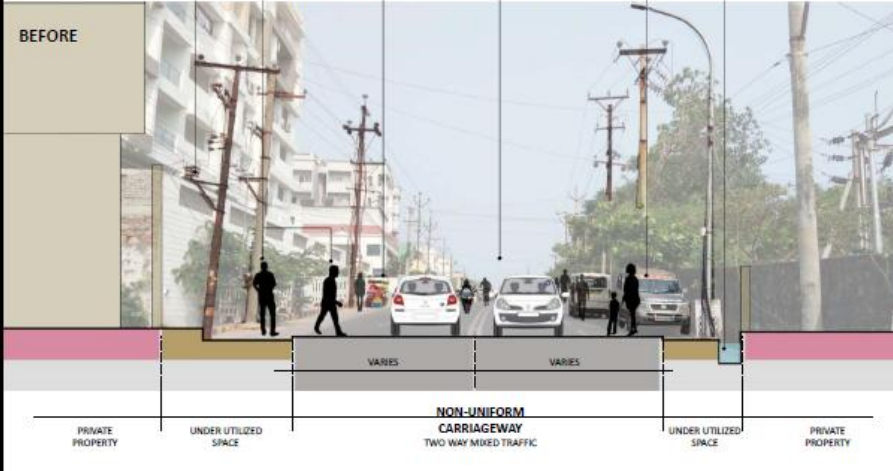
- Unsafe Handling in Transportation
- Increased Time to Market
- Increase in Traffic Congestion
- Occupies more space
- Human Intervention- Pilferage



- Uninterrupted supply through pipes
- Lighter than Air- Vaporizes Immediately
- Frees space in Kitchen

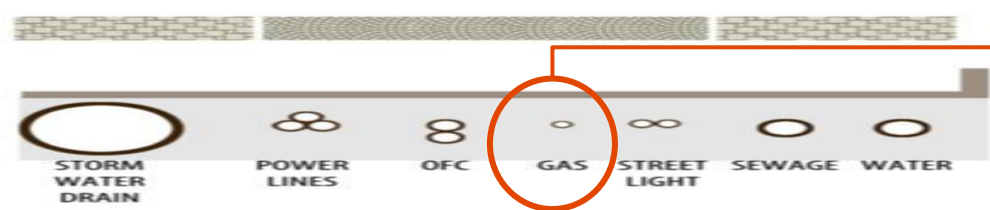
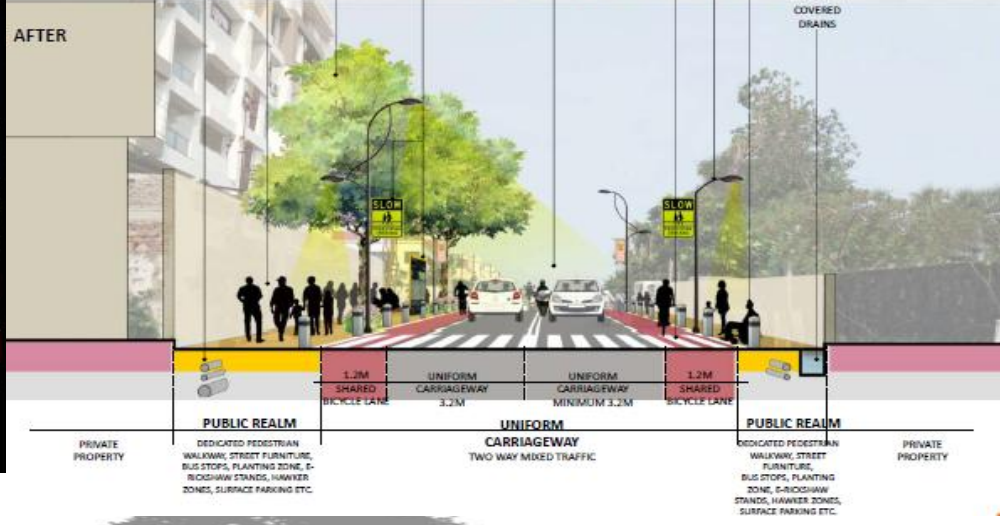
## Howroji Road- Existing

ABOVE GROUND UTILITIES & HANGING WIRES  
 NO PLACE FOR PEDESTRIANS TO WALK AND CROSS SAFELY  
 LACK OF DEDICATED STREET VENDING ZONES  
 NON-UNIFORM CARRIAGEWAY WIDTH VARYING FROM 8M TO 18M  
 UN-REGULATED PARKING  
 UNCOVERED DRAINS



## Howroji Road- Proposed

TREES FOR SHADED WALKWAYS  
 UNDERGROUNDING OVERHEAD CABLING (CONVERGENCE)  
 DEDICATED, PEDESTIAN WALKWAY  
 WAYFINDING/INFORMATIONAL / DIRECTIONAL SIGNAGES  
 UNIFORM CARRIAGEWAY WIDTH WITH SHOULDER / SHARED BICYCLE LANE ON EITHER SIDE  
 STREET LIGHTS  
 PEDESTRIAN CROSSINGS  
 UNIVERSAL ACCESSIBLE DESIGN  
 COVERED DRAINS



→ Gas Corridor





# GoI - Support Provided

- **Allocation of Domestic Gas to CGD sector under no cut category**
  - Price of domestic gas revised to \$3.06 per MMBTU.
- **Public Utility Status granted to CGD Projects**
- **Supply of domestic gas to Non Domestic Exempted (NDEC)Category**
- **Timely Permissions and Exorbitant Charges:** MoP&NG has taken initiative to sort out the issues faced by CGD entities with various State/Local authorities.
- **Piped gas supply in all smart cities** – MoUD has advised all the States / Union Territories to ensure provision of piped gas supply in all smart cities
- Ministry of Defense issued guidelines for use of PNG in its residential areas/unit lines



## Way Forward/ Support Required- Central Govt.

- **Fiscal Incentives**
  - **Natural gas is to be brought under the ambit of GST**
    - Level playing field w.r.t. Commercial LPG and Furnace Oil
  - **Until CGD does not come under the purview of GST**
    - No custom duty in case RLNG is used
    - Removal of Excise Duty from CNG
  - **Tax rate for Domestic PNG should be at par with Domestic Subsidized LPG**
  - **“Infrastructure Status” to CGD network**
- Declaring subsidized LPG free zones (14.2 Kg.) wherever there is PNG penetration.



## Way Forward/ Support Required- State Govt.

- Single Window Permission for faster execution of CGD Project
- “Public Utility” Status to PNG already granted, Implementation to be expedited
- Inclusion of PNG (D) in planning phase of new/under construction buildings / apartments
- Mandating PNG connection for Govt. / PSU residential colonies and education Institutes
- Rationalization of Restoration charges and consideration of “Dig & Restore”
- Land allocation for installation of CNG stations within cities
- Induction of more number of CNG buses by State Transport Authorities.
- Banning of use of polluting fuels like FO to reduce pollution
- Mandatory conversion of diesel generators to gas based generators in commercial installations like shopping malls, hospitals, mobile towers, restaurants, government offices and high - rise residential buildings.



**Thank You**



## Urja Ganga Project

- 2540 Km long gas pipeline project at the Cost of Rs. 12940 Crore
- Capital Grant of Rs. 5176 Crore (i.e. 40% of Rs 12940 Crore) by Gol
- 5 States viz. Uttar Pradesh, Bihar, Jharkhand, Odisha and West Bengal, covering 40 Districts and 2600 Villages.
- Synchronized development of 7 City Gas Distribution Network (CGD) projects viz Varanasi, Patna, Jamshedpur, Kolkata, Ranchi, Bhubaneswar and Cuttack .
- First LNG Terminal in East Coast coming up in Dhamra (Odisha).
- Revival of 3 Fertilizer Plants located at Gorakhpur, Barauni and Sindri and development of new City Gas Projects in Eastern India.

## Policy Enablers for Gas Based Solutions

- Provision for Gas Corridor with other utility services
- Provision for land for CNG Stations in Master Plan
- Conversion of vehicles to CNG
- New/under construction houses should have provision of PNG
- Obligatory CCHP and Diesel running generators /Power Backups to be replaced by Gas Based Generators
- GSM based metering for domestic and commercial connections



# State Govt. Authorities Granting Permissions

## For Pipeline

- State Road/ PWD
- State Pollution Control Board
- State Forest Clearances
- State Industrial Development Corporation
- Irrigation Department
- Nagar Nigam / Local City Development Authority/ MCD

## For CNG Stations

### • **DM NOC**

- Superintendent of Police
- Municipal Commissioner
- Sub-Divisional Magistrate
- Executive Engineer-Power Distribution
- Executive Engineer-O/oCh. Electrical Officer
- Executive Engineer-PWD
- Regional Officer-Pollution Control Board
- Divisional Forest Officer
- Director/Jt. Director-District Industries Centre
- District Food & Supplies Controller
- District Town Planner
- Fire Station Officer

# Standardization of Timelines for Permissions- CNG Stations



S/N	Type of Permission	Timelines in Weeks
1	PESO Permission for Layout	4
2	Building Sanction Plan	4
3	NOC from Fire Services, Heritage Authorities	8-40
4	Sanction of Building Plan	2-4
5	Receipt of NOC as per GCR 2004	26
6	Final PESO Approval	2
7	Completion Certificate	32

Note :

- Some of these permissions are applied in parallel





# Standardization of Timelines for Permissions- CGD Pipelines

State Government Departments		
1	State Road/ PWD	20-30 Days
2	State Forest Clearances	6-8 Month
3	State Pollution Control Board	1-2 Months
4	State Industrial Development Corporation	1-2 Months
5	Irrigation Department	1-2 Months
6	Development Authority	1-2 Months
7	Municipal Corporation/Municipality/MCD	1-2 Months

❖ **No Permission is granted during 3-4 months of Monsoon period.**

## **Support Required:**

- **Establishment of Nodal Agencies at the earliest.**  
*Recent directive from State Government of Haryana & Uttar Pradesh -7 days*
- **Request for permission time for CGD P/L & CNG to be kept within 1 month.**