



Welcome

to

Presentation

on



Pipeline for CBM/CMM production

25.04.2019

GAIL (India) Limited

GAIL - BUSINESS PORTFOLIO

GAS PIPELINES

LENGTH : 11075 KMS
(CAPACITY: 206 MMSCMD)

LPG PIPELINES

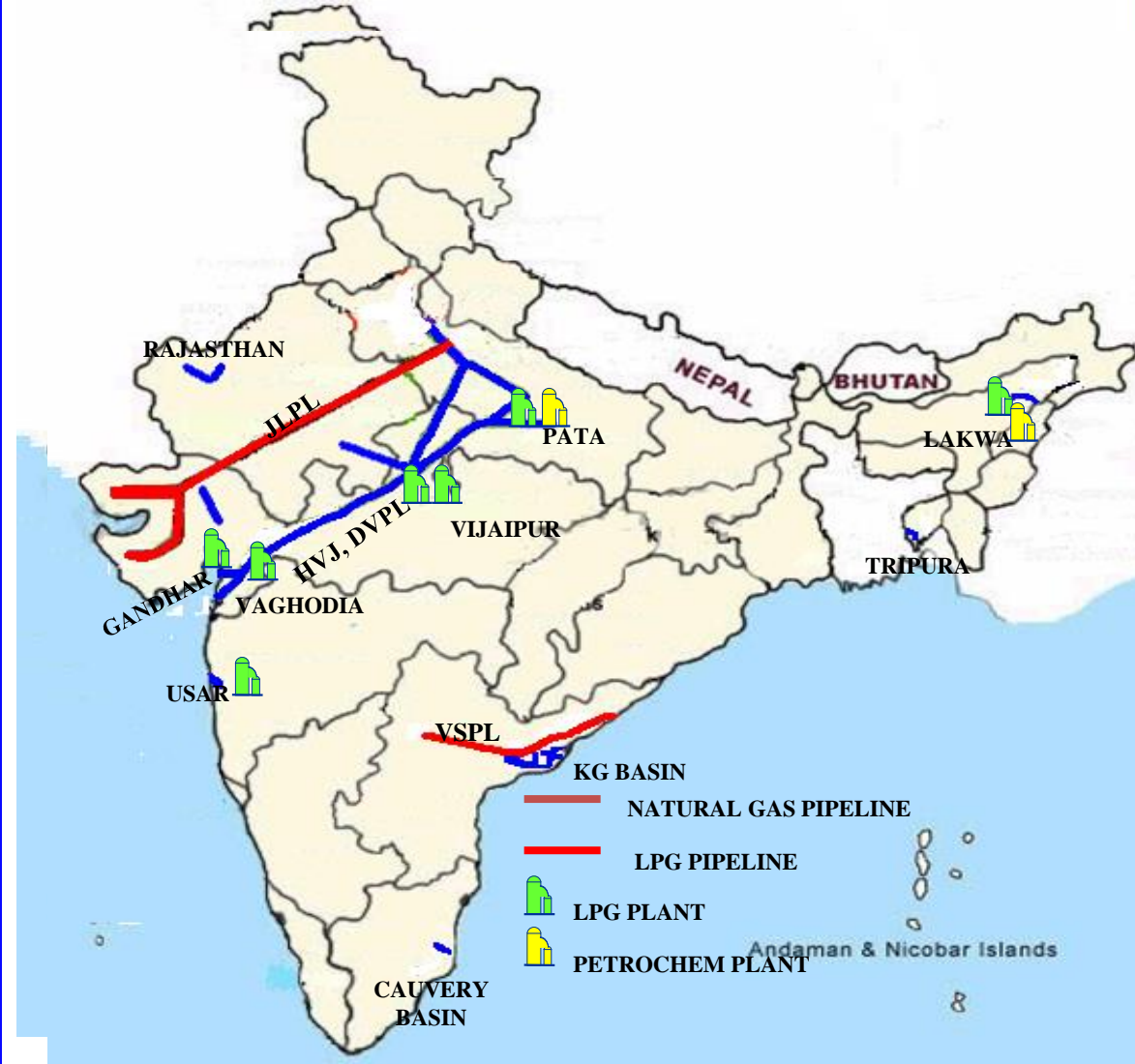
LENGTH : 2038 KMS
(THROUGHPUT: 3.8 MMTPA)

GAS PROCESSING

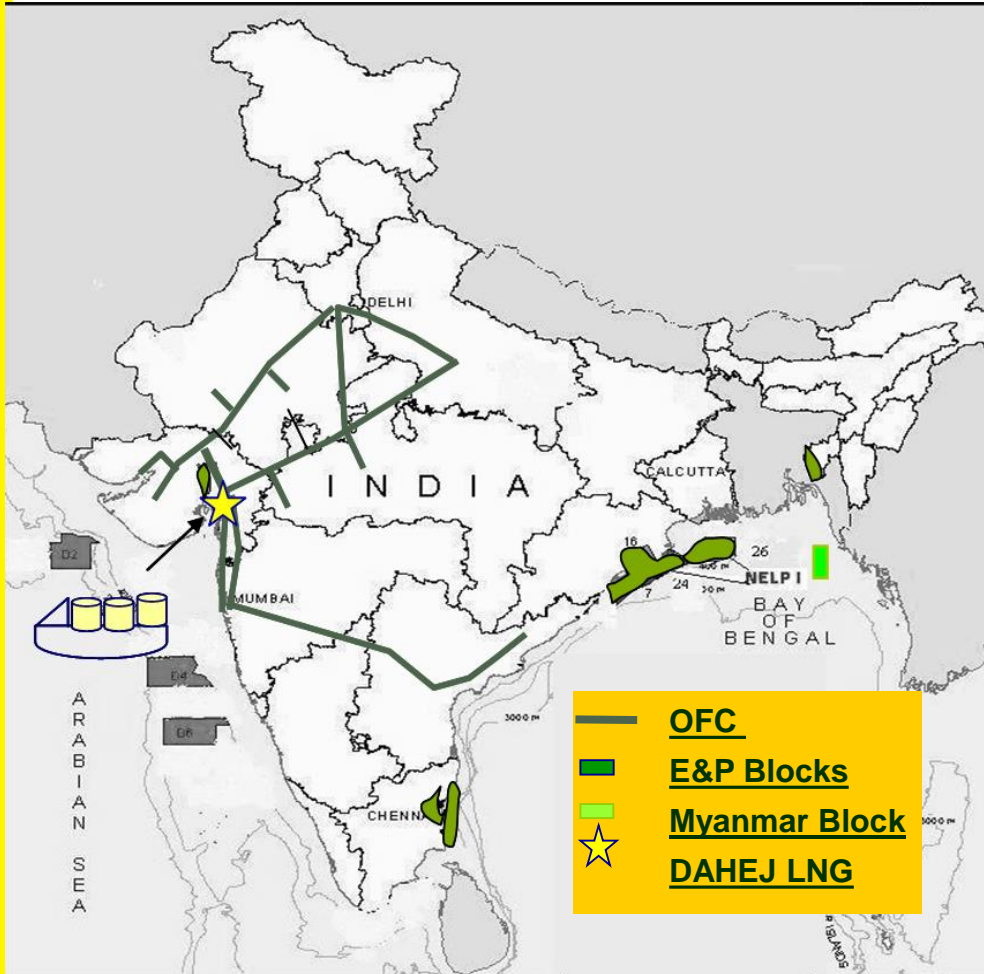
6 Gas Processing Plants
producing LPG, Propane,
Pentane, Naphtha etc.

PETROCHEMICALS

PATA: 810,000 TPA (Polymer)
BCPL (JV) : 220,000 TPA
(Polymer)



GAIL - BUSINESS PORTFOLIO



E&P

Participation in 12 blocks (operator-1 blocks)

Presence in Myanmar & US

R-LNG

PLL- Dahej, RGPPL- Dabhol

Subsidiary

GAIL Gas Ltd (City gas, CNG corridor and related infrastructure)

Gas Retail (JV's)

IGL, MGL, BGL, CUGL, GGL, MNGL, TNGCL, AGCL

Power

118 MW Wind power , 5MW Solar power
1967 MW RGPPL, Dhabol



GAIL's EXISTING NG PIPELINES

GAIL (India) Limited



S. No.	Name of the Natural Gas Pipeline	Name of Entity	Length (KM)
1	Hazira-Vijaipur-Jagdishpur -GREP (Gas Rehabilitation and Expansion Project)- Dahej-Vijaipur HVJ/VDPL	GAIL(India) Limited	4658
2	Dahej-Vijaipur (DVPL)-Vijaipur-Dadri (GREP) Upgradation DVPL2 & VDPL	GAIL(India) Limited	1119
3	Dahej-Uran-Panvel-Dhabhol	GAIL(India) Limited	875
4	Agartala regional network	GAIL(India) Limited	61
5	Mumbai regional network	GAIL(India) Limited	129
6	Assam regional network	GAIL(India) Limited	8
7	K.G. Basin network(+RLNG+RIL)	GAIL(India) Limited	881
8	Gujarat regional network(+RLNG+RIL)	GAIL(India) Limited	671
9	Cauvery Basin network	GAIL(India) Limited	278
10	Dukli Maharajganj (Earlier-Agartala)	GAIL(India) Limited	5

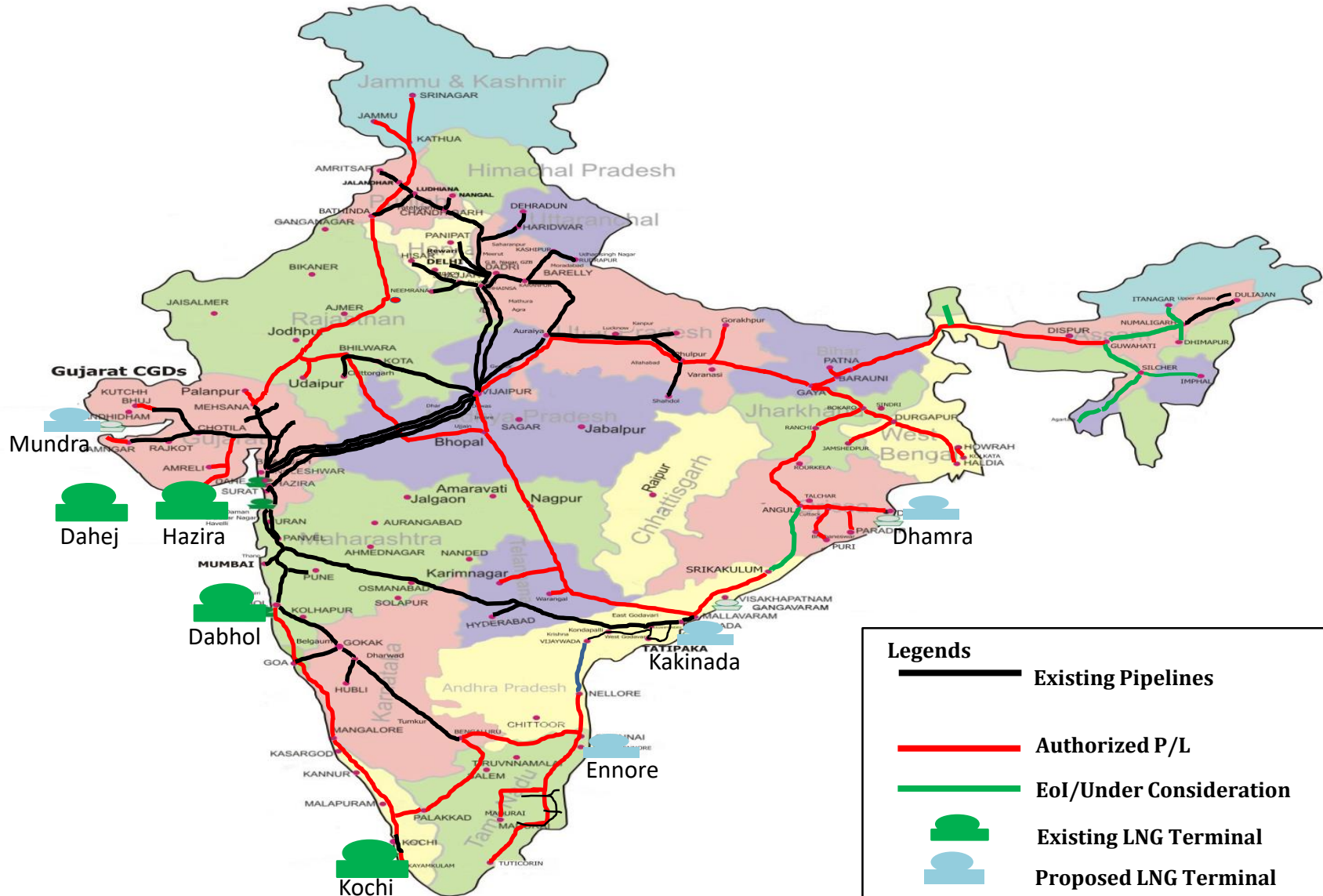


GAIL's EXISTING NG PIPELINES






GAIL (India) Limited



S. No.	Name of the Natural Gas Pipeline	Name of Entity	Length (KM)
11	Rajasthan regional network	GAIL(India) Limited	152
12	Dadri-Bawana-Nangal	GAIL(India) Limited	835
13	Chhainsa-Jhajjar-Hissar	GAIL(India) Limited	265
14	Dabhol-Bangalore	GAIL(India) Limited	1097
15	Kochi-Koottanad-Bangalore-Mangalore*	GAIL(India) Limited	41
GRAND TOTAL			11075



Legends

-  Existing Pipelines
-  Authorized P/L
-  EoI/Under Consideration
-  Existing LNG Terminal
-  Proposed LNG Terminal

-Not to the Scale
-Pipelines Route are Indicative in Nature

Existing CBM pipeline network in India

- **M/s Reliance has laid Shahdol – Phulpur pipeline** of 16” x 303 km for transportation of CBM gas from its field in Shahdol. The gas is being supplied to IFFCO Phulpur. Present gas volume is about 0.9 MMSCMD
- **M/s ESSAR has low pressure pipeline network** of about 30 km and high pressure line of 29 km for CBM gas in Durgapur in West Bengal. Potential low pressure gas volume is about 1.8 MMSCMD and high pressure volume is about 3.0 MMSCMD. The gas is being supplied to Matix Fertilizer and other customers in the region.

New CBM Blocks

ONGC has CBM Blocks in Bokaro, Jharia and North Karanpura. The details of the same are as below:

Total CBM Gas Production: 2.4 MMSCMD

Distance of CBM Blocks from JHBDPL Network:

1. Bokaro : 25-30 Km
2. Jharia : 10 -15 Km
3. Karnapura : 85 -90Km

New CBM Blocks

CBM block of CIL:

(i) Jharia CBM block under BCCL

(i) Raniganj CBM Block under Eastern Coalfield Ltd.(ECL).

Tentative CBM gas production: 1-1.5 MMSCMD initially, however there could be upside potential and peak production could reach to 3-4 MMSCMD.

Distance of CBM Blocks from JHBDPL Network:

1. Jharia : 10 -15 Km

2. Raniganj : 20 -25Km

Options of Gas evacuation from CBM Blocks

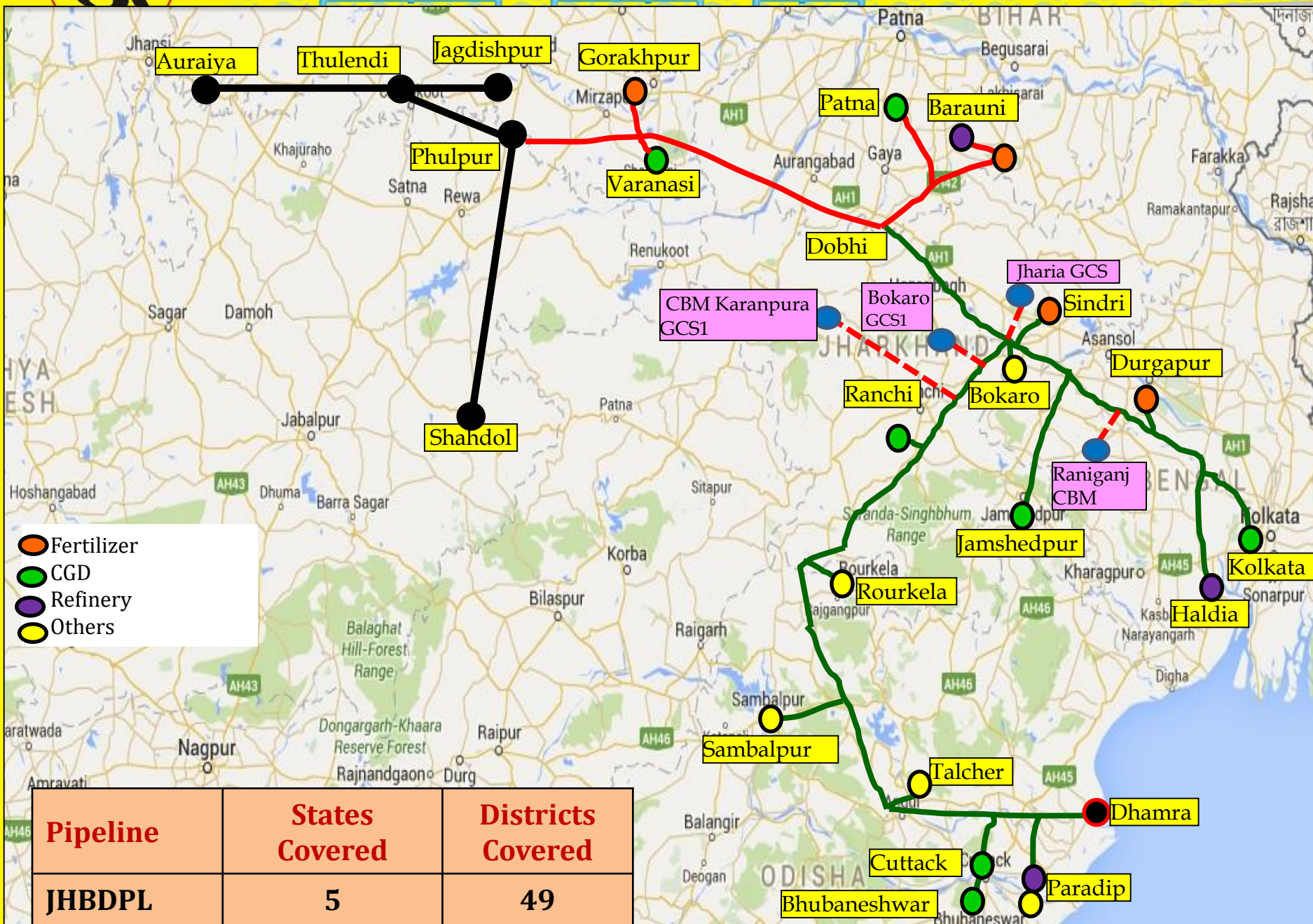
CBM gas from identified CBM blocks can be evacuated for supply to potential customers in following manner:

- If the CBM pressure is high (70-80 kg/cm²g), it can be evacuated through GAIL's under-execution JHBDPL pipeline and can be transported to any customer connected with National gas Grid.
- However if pressure is low, then compressor is required to be installed for injection into JHBDPL based on the economic viability.
- Further, if economic viability is not there, then low pressure gas can be supplied to nearby CGD entities for catering PNG/CNG requirement by laying low pressure pipeline CBM operator or CGD entity or any authorized entity.
- Dedicated pipeline to any single customer in the vicinity



CBM blocks connectivity with JHBDPL

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- Fertilizer
- CGD
- Refinery
- Others

Pipeline	States Covered	Districts Covered
JHBDPL	5	49



Nearby Authorized CGD GA

Sr. No.	GA Name	State	Successful Bidder
1	Bokaro, Hazaribagh & Ramgarh Districts	Jharkhand	IOCL
2	Giridih & Dhanbad Districts	Jharkhand	GAIL Gas Ltd.
3	Burdwan District	West Bengal	IOAGPL
4	Nadia (Except Area already authorized) District and North 24 Parganas (Except Area already authorized) District	West Bengal	HPCL
5	North 24 Parganas (Except Area already authorized) District	West Bengal	HPCL
6	Chatra and Palamu Districts	Jharkhand	Bharat Gas Resources Ltd.
7	Seraikela-Kharsawan District	Jharkhand	GAIL Gas Ltd.

Regulatory Provisions

Tie-In :

- Upstream connectivity of any Common carrier pipeline by:
 1. Connectivity with other common carrier pipeline
 2. Connectivity with Gas source
- Tie-in length is Limited to 200 Km
- Tie- in can be developed either by Transporter or by Shipper
 - In case of transporter - Capex will be considered in tariff
 - In case of Shipper – Capex to be recovered from gas price.
- PNGRB Permission is required

Dedicated Pipeline:

- Pipeline can be laid either by supplier or customer based on mutual agreement
- PNGRB has to be informed only.

Gas quality specifications

As per PNGRB access code, gas quality shall meet following specification:

Parameters	Limit
Hydrocarbons dew pt (Degree Celsius, max.)*	0
Water dew pt(Degree Celsius, max)*	0
Hydrogen Sulphide (ppm by wt. max.)	5
Total Sulphur (ppm by wt. max.)	10
Carbon dioxide (mole % max.)	6
Total inerts (mole %)	8
Temperature (Degree Celsius, max.)	55
Oxygen(% mole vol. max.)	0.2



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Thank You

CBM Blocks

ONGC has CBM Blocks in Bokaro, Jharia and North Karanpura. The details of the same are as below:

S. N	Block	Installation	Peak production (MMSCMD)	Presently envisaged delivery pressure kg/cm ² g	Tentative distance from JHBDPL (KM)	Required pressure for injection into JHBDPL
1	Bokaro	GCS	0.99	7-10	25	70-80
2	Jharia	GCS	0.90	7-10	5	
3	North Karanpura	GCS 1	0.51	28-30	50	
4		GCS 2				
5		GCS 3				

■ Pipeline configuration

Mainline : 30" x 1,323 km (Phulpur-Bokaro-Ranchi-Angul-Kolkata ToP)

Mainline : 36" x 210 km (Dhamra-Angul)

Mainline : 24" x 148 km (Kolkata ToP - Haldia)

Mainline : 24" x 162 km (Dobhi-Barauni)

Mainline : 24" x 708 km (Barauni- Guwahati)

Spurline : 24" / 18" / 12" / 8" / 6" / 4" x 755 Km

Total Length - 3306 Km

■ Pipeline capacity - 16 MMSCMD

■ **States Covered:** Uttar Pradesh, Bihar, Jharkhand, West Bengal, Orissa, Asaam

■ Estimated cost : Rs. 16248 crores (=12940+3308)

■ Construction schedule:

JHBDPL section-I : December 2018

JHBDPL balance section : December 2020

BGPL section : December 2021

Reliance CBM specifications

Parameters	Mole %
C1	96.06
C2	0.31
C3	.0057
ic4	.0076
nC4	0.0007
iC5	0.0004
nC5	0
C6+	0.0004
Nitrogen	1.75
CO2	1.85
Total	100