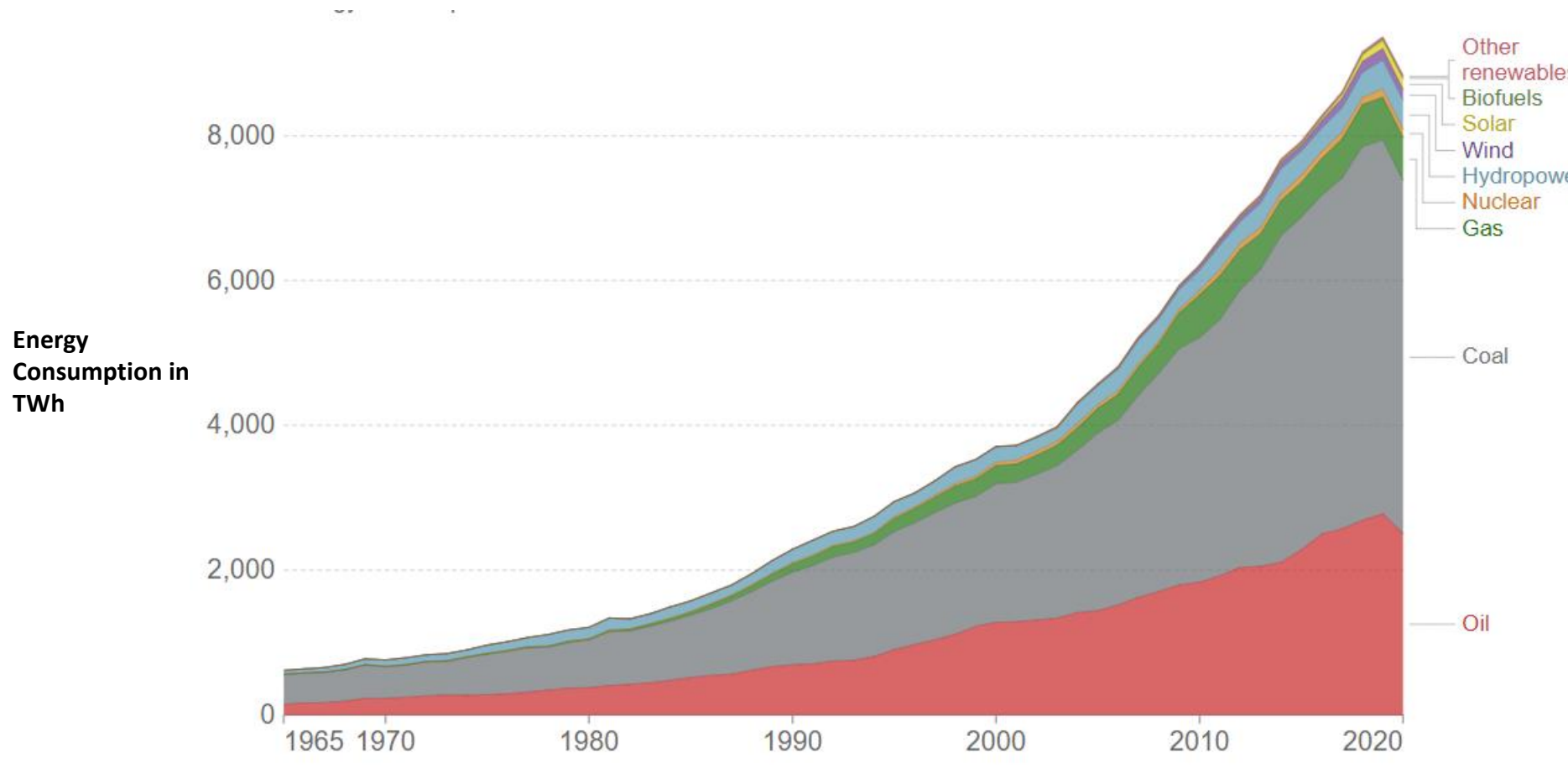


# INDIA'S Gas based economy: A Gateway to Energy Security



# Energy Consumption by source in India



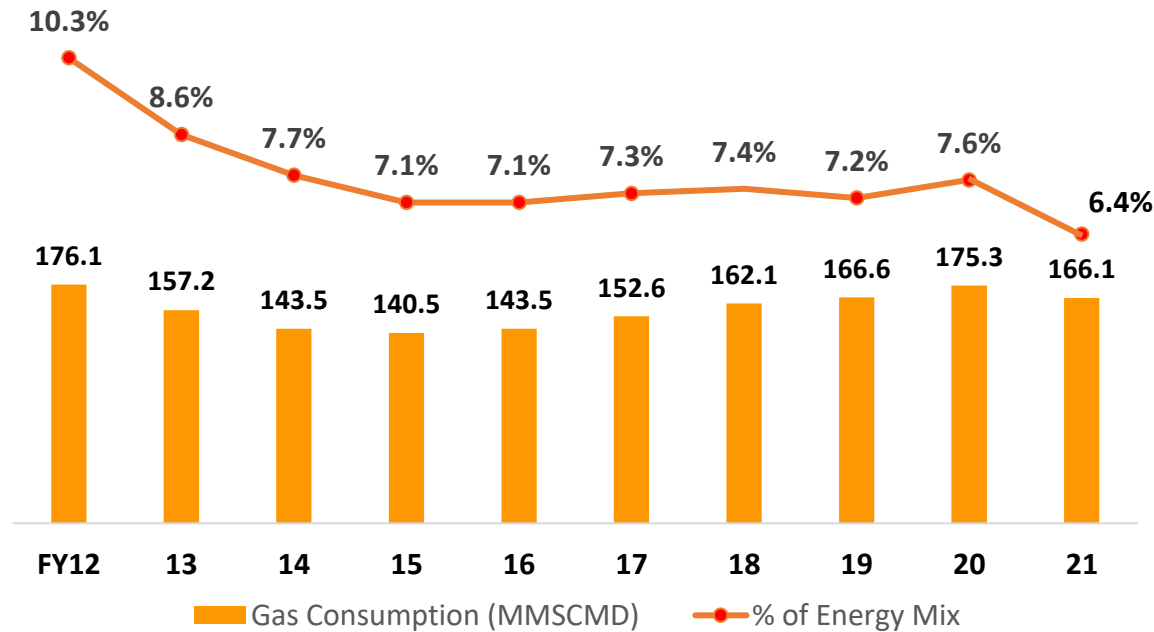
- Energy Consumption has been constantly increasing, however maximum contribution is coming from polluting sources like Coal followed by Oil
- Contribution of Gas has been almost stagnant in last 10 years
- Contribution of Renewable sources has increased considerably

Source: BP Statistical Review of World Energy  
Note: 'Other renewables' includes geothermal, biomass and waste energy.

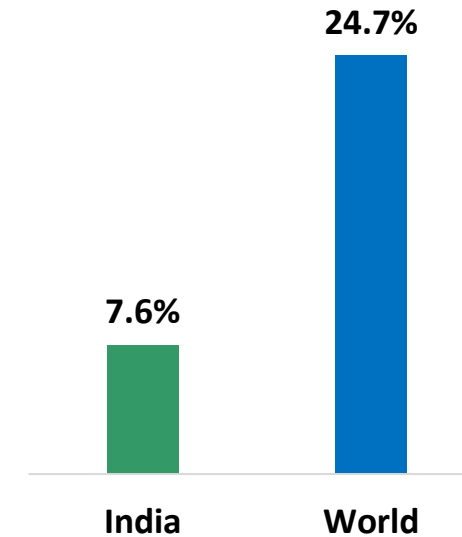
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Growth in gas consumption has been very stagnant in last decade and NG's share in Energy basket is much lower than global average

## Gas Consumption and its share in Energy Mix



## Natural Gas Share in Energy Mix (2020)



- Gas consumption linked to domestic gas availability, LNG affordability and infrastructure
- In the state of Gujarat, share of natural gas in energy mix is 26%
- The per capita consumption of NG in India only around 29 SCM as compared to the world average of 363 SCM
- NG share in India's energy mix far below global average – **room for growth**

## II. 18 : Sector-wise Sales/Consumption of Natural Gas

(Figures in MMSCM)

Sector	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21 (P)	% Share of Total 2020-21
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
<b>(a) Energy Purpose</b>								
Power	10720	10889	11616	12028	12005	11080	10836	19.3
Industrial & Manufacturing	533	545	794	999	1086	701	555	1.0
City or Local Natural Gas Distribution Network incl. Road Transport	5416	5464	7350	8585	9206	10883	9230	16.4
Agriculture (Tea Plantation)	180	187	183	189	192	200	177	0.3
Internal Consumption for Pipeline System	351	410	471	496	541	525	439	0.8
Refinery	4575	5077	5374	6533	7047	7786	7911	14.1
LPG Shrinkage	1005	754	759	798	874	858	900	1.6
Miscellaneous	5941	4111	3746	3226	3393	4209	4569	8.1
<b>Total (a)</b>	<b>28721</b>	<b>27437</b>	<b>30294</b>	<b>32854</b>	<b>34343</b>	<b>36241</b>	<b>34617</b>	<b>61.7</b>
<b>(b) Non-Energy Purpose</b>								
Fertilizer Industry	15190	16135	15429	14676	14987	16115	17781	31.7
Petrochemical	2890	3733	4170	4024	3386	3569	3072	5.5
Sponge Iron	154	544	885	1278	1124	567	647	1.2
<b>Total (b)</b>	<b>18234</b>	<b>20412</b>	<b>20484</b>	<b>19978</b>	<b>19497</b>	<b>20251</b>	<b>21500</b>	<b>38.3</b>
<b>Total Sactoral Sales (a+b)</b>	<b>46955</b>	<b>47849</b>	<b>50778</b>	<b>52832</b>	<b>53840</b>	<b>56492</b>	<b>56117</b>	<b>100.0</b>
<b>Total Consumption **</b>	<b>51300</b>	<b>52517</b>	<b>55697</b>	<b>59170</b>	<b>60798</b>	<b>64144</b>	<b>60645</b>	-
<b>Total Consumption in MMSCMD</b>	<b>140.55</b>	<b>143.49</b>	<b>152.59</b>	<b>162.11</b>	<b>166.57</b>	<b>175.26</b>	<b>166.15</b>	-

Note : \*\* : Availability Basis (Net Production+LNG Imports)

P : Provisional

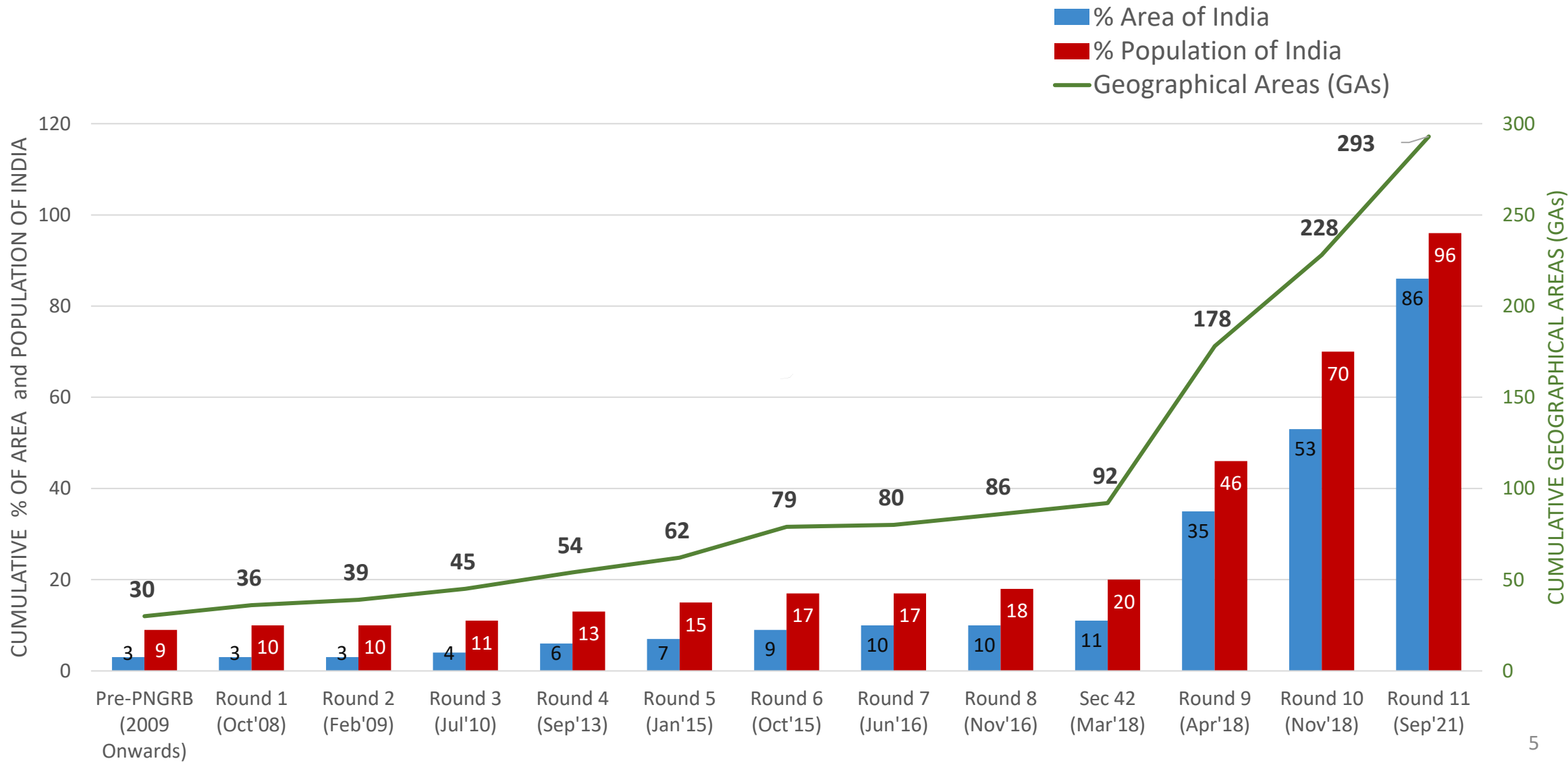
Figure II. 14 : Trend of Natural Gas Production & Consumption



- About 50% of NG requirement is catered through import
- Import has increased by 78%, from 49 MMSCMD in FY 15 to 87 MMSCMD in FY 21
- However, consumption has increased by just 17% from 141 MMSCMD in FY 15 to 166 MMSCMD in FY 21.
- Matter of concern is decreasing domestic production, which declined by 14% from 92 MMSCMD in FY 14 to 79 MMSCMD in FY 21
- The consumption sector which has witnessed significant growth is City gas distribution, from 5416 MMSCM in FY 14 to 9230 MMSCM in FY 21 i.e growth of 70%.

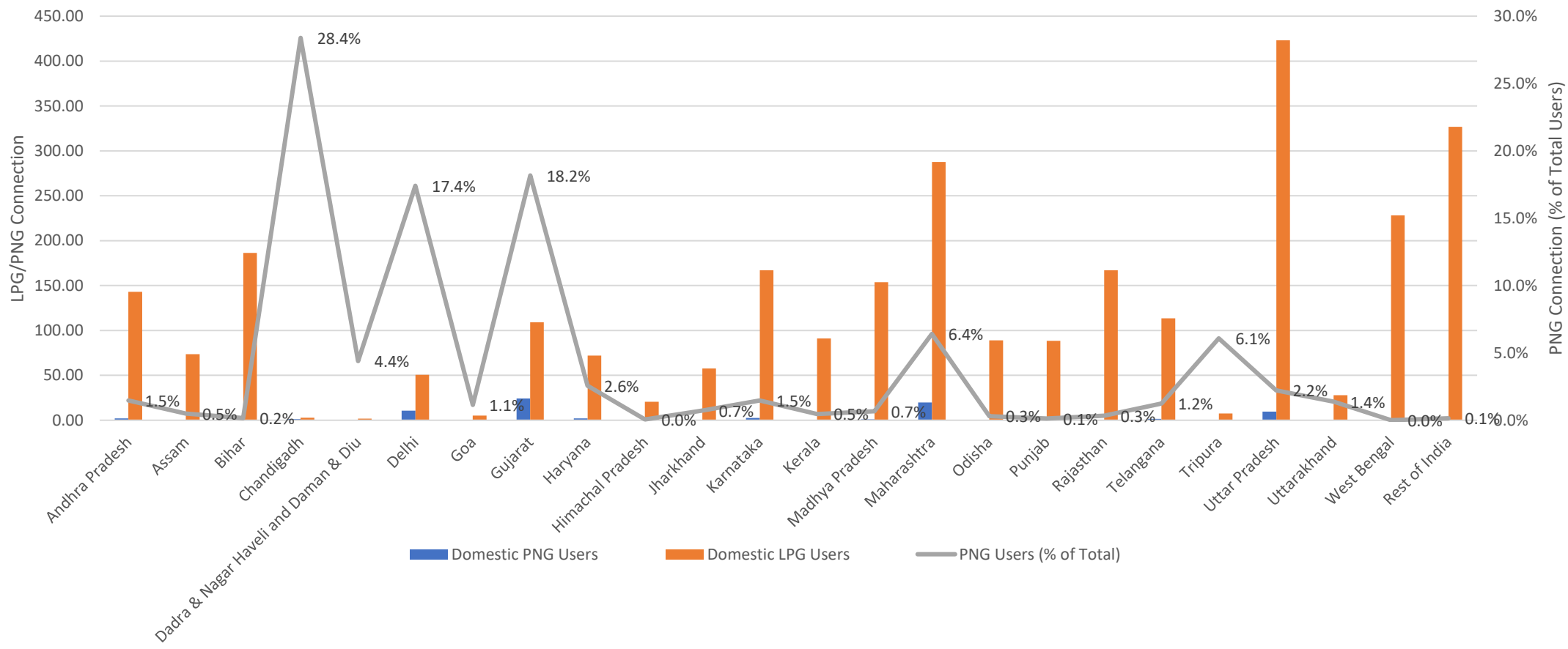


**Development of CGD Network: post 11<sup>th</sup> round, coverage is set to increase to 96% of population, however, actual coverage is below 3% with only 82 lakh domestic PNG Consumers, while domestic LPG users are more than 25 Cr**



In spite of 70% population coverage till 10<sup>th</sup> Round, domestic users coverage in most of the State is below 2%, however, LPG coverage is almost 100%

### LPG vs PNG Domestic Users



**CNG Vehicles**  
30 Lakh\*

\* About 5% of total vehicles (3 wheeler or more)

**CNG Stations**  
3465

**Commercial Customers**  
33294

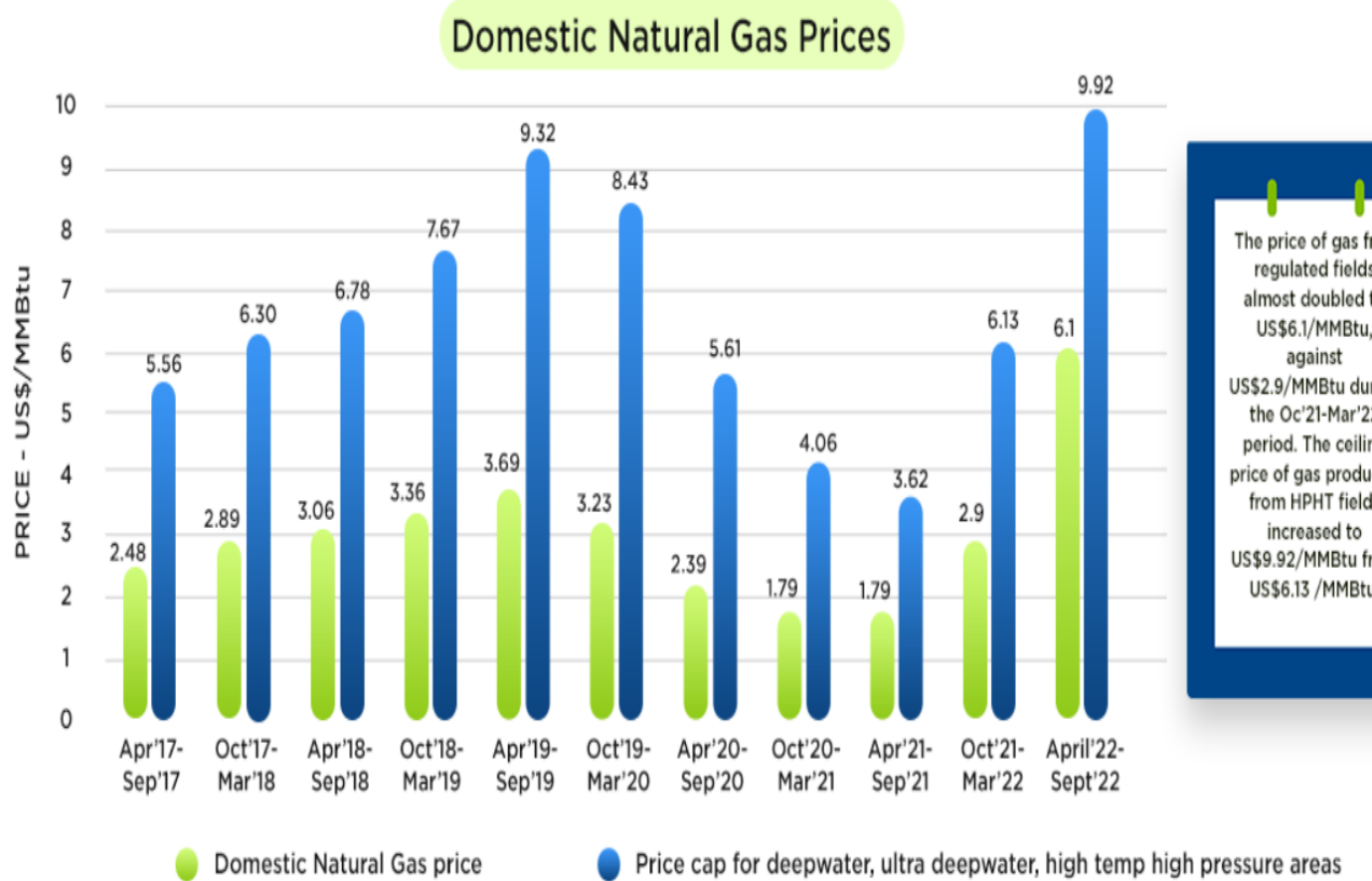
**Industrial Customers**  
12527

# APM Gas Price Trend – Domestic Natural Gas

## GAS PRICE REVISIONS SINCE 2014

(\$ per million British thermal units)

Time period	Domestic natural gas price	Ceiling price of gas from difficult discoveries
1st Nov'14 – 31st Mar'15	5.05	–
1st Apr'15 – 30th Sep'15	4.66	–
1st Oct'15 – 31st Mar'16	3.82	–
1st Apr'16 – 30th Sep'16	3.06	6.61
1st Oct'16 – 31st Mar'17	2.50	5.30
1st Apr'17 – 30th Sep'17	2.48	5.56
1st Oct'17 – 31st Mar'18	2.89	6.30
1st Apr'18 – 30th Sep'18	3.06	6.78
1st Oct'18 – 31st Mar'19	3.36	7.67
1st Apr'19 – 30th Sep'19	3.69	9.32
1st Oct'19 – 31st Mar'20	3.23	8.43
1st Apr'20 – 30th Sep'20	2.39	5.61
1st Oct'20 – 31st Mar'21	1.79	4.06
1st Apr'21 – 30th Sep'21	1.79	3.62
1st Oct'21 – 31st Mar'22	2.86*	5.79*
<b>1st April 22 – 30th Sep 22</b>	<b>6.10</b>	<b>9.92</b>
<b>1st Oct 22- 31st March</b>	<b>8.57</b>	<b>12.6</b>



The price of gas from regulated fields almost doubled to US\$6.1/MMBtu, against US\$2.9/MMBtu during the Oc'21-Mar'22 period. The ceiling price of gas produced from HPHT fields increased to US\$9.92/MMBtu from US\$6.13 /MMBtu.

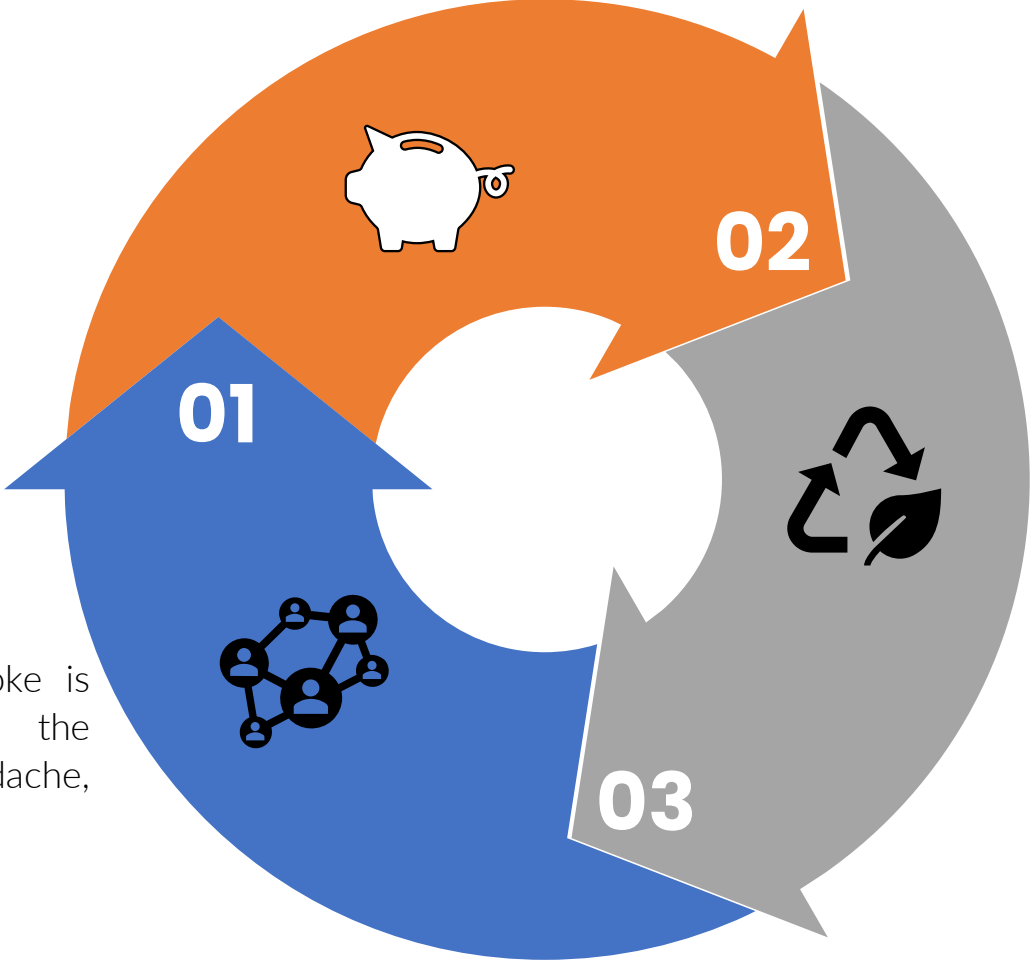
# Impact of CGD Sector: Economic, Social & Environmental

## Economic

- Over next 8 years, \$ 140 bn of new direct investment in natural gas sector will be done.
- 11<sup>th</sup> Round will mobilize investment of INR 83,000 Cr and employment of about 83000

## Social

- Exposure to biomass fuel smoke is significantly associated with the prevalence of symptoms of headache, dry cough, and HT.



## Environmental

- Natural gas, the simplest Hydrocarbon and cleaner source, will play a very important role in the India's energy transition.
- As gas become more competitive, it will help advance decarbonization by coal to gas switching in power and oil to gas switching in transportation industry
- Even at 10% adoption of CNG Vehicles, carbon emission per year would be reduced by approx. 10 mn Ton, equivalent to about INR 2000 Cr of Carbon Credit



# New Domestic Natural Gas Pricing Guidelines, 2014

1. The wellhead gas price\* (P), under these guidelines would be determined as per the formula given below:-

$$P = \frac{V_{HH} P_{HH} + V_{AC} P_{AC} + V_{NBP} P_{NBP} + V_R P_R}{V_{HH} + V_{AC} + V_{NBP} + V_R}$$

Where

- (i)  $V_{HH}$  = Total annual volume of natural gas consumed in USA & Mexico.
- (ii)  $V_{AC}$  = Total annual volume of natural gas consumed in Canada.
- (iii)  $V_{NBP}$  = Total annual volume of natural gas consumed in European Union (EU) and Former Soviet Union (FSU) countries, excluding Russia.
- (iv)  $V_R$  = Total annual volume of natural gas consumed in Russia.
- (v)  $P_{HH}$  and  $P_{NBP}$  are the annual average of daily prices at Henry Hub (HH) and National Balancing Point (NBP) respectively, less the transportation and treatment charges as given in para 2.
- (vi)  $P_{AC}$  and  $P_R$  are the annual average of monthly prices at Alberta Hub and Russia (as published by Federal Tariff of the Russian Government or equivalent source) respectively, less the transportation and treatment charges as given in para 2.

- The gas price, determined, under these guidelines would be applicable to all gas produced from nomination fields given to ONGC and OIL India.
- New Exploration and Licensing Policy (NELP) blocks, such as PreNELP blocks where, the Production Sharing Contract (PSC) provides for Government approval of gas prices and Coal Bed Methane (CBM) blocks.
- The periodicity of price determination/notification shall be half yearly. The price and volume data used for calculation of price under these guidelines shall be the trailing four quarter data with one quarter lag.
- The gas price, so determined under these guidelines shall not be applicable
  - ❖ where prices have been fixed contractually for a certain period of time, till the end of such period.
  - ❖ where the PSC concerned provides for a specific formula for natural gas price indexation/fixation
  - ❖ and to such PreNELP PSCs which do not provide for Government approval of formula/basis for gas prices.
  - ❖ Further, the pricing of natural gas from small/isolated fields in the nomination blocks of NOCs will continue to be governed by the extant guidelines in respect of these fields issued on 8th July, 2013.

## Ceiling on Gas Price Guideline- Marketing including pricing freedom for the gas to be produced from Discoveries in Deep Water, Ultra Deep Water and High Pressure – High Temperature Areas

- **The Ceiling Price in US \$ per mmbtu (GCV) shall be calculated as, Lowest of the three components:**

1. Landed Price of imported Fuel Oil
2. Weighted average import landed price of substitute fuels and
3. Landed Price of imported PNG

- The landed price-based ceiling will be calculated once in 6 months and applied prospectively for the next 6 months. The price data used for calculation of ceiling price in US \$ per mmbtu (GCV) shall be the trailing 4 quarters data with one quarter lag.
- To ensure transparency and simplicity in calculation, a simple mark up of 5% shall be applied to the FOB Prices of imported fuels to arrive at the landed price where published landed prices are not available

# Ceiling on Gas Price Guideline- Marketing including pricing freedom for the gas to be produced from Discoveries in Deep Water, Ultra Deep Water and High Pressure – High Temperature Areas

1 The landed price of imported fuel oil is defined as:

Twelve months simple average of daily prices quoted by Platts for Arab Gulf Fuel Oil 180 CST plus a mark-up of 5% towards freight, insurance etc.,

2 The weighted average import landed price of substitute fuels is defined as follows:

$0.3 \times \text{landed price of imported coal} + 0.4 \times \text{landed price of imported fuel oil} + 0.3 \times \text{landed price of imported naphtha}$

For this purpose, the landed price of imported coal is defined as:

Twelve months simple average of daily prices quoted by Platts for coal import.

For this purpose, the landed price of imported fuel oil is defined as:

Twelve months simple average of daily prices quoted by Platts for Arab Gulf Fuel Oil 180 CST plus a mark-up of 5% towards freight, insurance etc .

For this purpose, the landed price of imported naphtha is defined as:

Twelve months simple average of daily prices quoted by Platts for Arab Gulf Naphtha plus a mark-up of 5% towards freight, insurance etc..

3 The landed price of imported LNG is defined as:

Twelve months simple average of daily prices quoted by Platts in 'LNG Daily' for West India DES price.

B) For the purpose of this special dispensation of providing marketing freedom, fields having at least  $2/3^{\text{rd}}$  of the total number of appraisal and development wells in that field in deep water/ultra deep water/high pressure-high temperature area shall be considered as eligible for the special dispensation for the entire output from such fields. The classification will be as (a) Deep water areas: Areas having water depth between 400 meters and 1500 meters (b) Ultra-Deep water areas: Areas having water depth greater than 1500 meters (c) High Pressure-High Temperature Areas: Areas having shut-in well head pressure greater than 690 bars, bottom hole temperature greater than 150 degree centigrade. While considering the number of wells, the number of wells will be rounded off to the previous lower number of wells in case of decimals and the wells will mean the sub-surface geological location coordinates in the discovery reservoir(s) and the water depths will be vertically above the sub-surface geological locations (as per bathymetry).