



# NATURAL GAS - INDIA

## 2021 – The Year of Survival

By Deepika Lal

India is the world's third-largest energy consumer. India's economic growth is closely linked to its energy demand, where oil and gas play a key role. Therefore, in the Indian context, robust growth is expected in the oil and gas sector, thereby making the sector quite attractive and conducive for investment. Oil and gas is one of the core industries in India and plays a major role in influencing decision-making for the economy.

Within energy, natural gas remains the fuel of choice and a promising energy source because of its low emission of particulate matter, carbon dioxide, nitrous oxide and cleaner burning. The per capita consumption of natural gas in India is only around 29 standard cubic metre (SCM) vis-a-vis the world average of 363 SCM. Considering that and its benefits, the government has time and again shown its commitment to increasing gas share in India's primary energy mix, currently low at 6.2%, to 15% by 2030 and it has been supporting that with various policy directives and regulatory changes to reach that goal.

Given the background and despite the

prevalence of the Covid pandemic during the year, the gas sector was able to successfully tide over the turbulent 2021, especially the second quarter of the calendar year. There were hiccups but the sector performed admirably, showing significant growth in demand as well as domestic production. We have made an endeavour to bring to you the turns and twists in the gas story of the year 2021 which despite the pandemic showed resistance to all the negative factors impacting the economy and stayed on the growth path. The narrative has been made interesting with facts and figures.

### Gas Consumption

Partial lockdowns across the states due to COVID-19 in the first quarter of FY 2021 hurt the gas industry. But gas consumption picked up thereafter and returned to higher than normal levels as the second wave of pandemic decreased. For the first six months of 2021 from April to September, the daily consumption was much higher at 175 MMSCMD than the average daily consumption at 166 MMSCMD during 2020-21 and the same period in the previous year.

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### Gas Statistics -Production/Consumption/Imports

	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22 (Apr-Sep)	2020-21 (Apr-Sep)
Net production	84.52	86.93	87.83	82.90	76.12	89.99	73.73
LNG Imports	68.08	75.18	78.74	92.84	90.03	85.67	86.33
<b>Total consumption (incl internal consumption)</b>	<b>152.59</b>	<b>162.11</b>	<b>166.57</b>	<b>175.74</b>	<b>166.15</b>	<b>175.67</b>	<b>160.05</b>

Sector-wise Gas Consumption 2020-21 (MMSCMD)							
	Fertiliser	Power	CGD	Refineries	Petro	Others	Total
RLNG	30.76	9.76	12.21	16.81	7.29	9.84	86.67
Domestic	17.96	19.92	13.08	4.86	1.13	10.13	67.08
<b>Total</b>	<b>48.72</b>	<b>29.69</b>	<b>25.29</b>	<b>21.67</b>	<b>8.42</b>	<b>19.96</b>	<b>153.74</b>
Sector's share in total consumption (%)	31.69	19.31	16.45	14.10	5.47	12.98	100.00

Sector-wise Gas Consumption (Apr-Sep 21)							
	Fertiliser	Power	CGD	Refineries	Petro	Others	Total
RLNG	32.17	12.56	9.53	13.21	6.93	10.10	84.51
Domestic	16.46	17.75	18.07	3.46	0.71	24.01	80.46
<b>Total</b>	<b>48.63</b>	<b>30.32</b>	<b>27.60</b>	<b>16.67</b>	<b>7.64</b>	<b>34.11</b>	<b>164.97</b>
Sector's share in total consumption (%)	29.48	18.38	16.73	10.10	4.63	20.68	100.00

**The recent development in the CGD sector seems significant from the automotive industry's perspective as sale of CNG increased in this segment. Industry statistics indicate the growth in demand for CNG cars reached an all-time high of 49% (YoY) to 1.71 lakh units during FY2021.**



Sector-wise, fertiliser and power maintained their share in gas consumption at 32% and 19% respectively. CGD sector followed closely with a 17% share in gas consumption with increased demand due to overly priced alternative fuels diesel, gasoline and other alternative fuels in other sectors and the increasing coverage of gas distribution networks.

The recent development in the CGD sector seems significant from the automotive industry's perspective as the sale of CNG increased in this segment. Industry statistics indicate the growth in demand for CNG cars reached an all-time high of 49% (YoY) to 1.71 lakh units during FY2021. Sensing the trend, top passenger vehicle makers, Maruti Suzuki and Hyundai have been pushing CNG models in the recent past. While Maruti recorded nearly 45% growth to 1.57 lakh units during last fiscal, Hyundai saw more than 100% growth registering over 23,000 units sales. On the fuel availability front, more than 1000 CNG stations were added last year, taking the total stations to over 3200 across the country in 2020-21. As per the commitment of the CGD sector, it is expected that the number of CNG retail stations will increase to 10,000 in the next 7-8 years. Gas marketing companies, on other hand, are firming up their target to build LNG fuel stations across the country's industrial corridors. The additional retail infrastructure for CNG and LNG will most certainly give an

added fillip to natural gas sales.

### Gas Supply

Higher consumption was supported by a record gas production of 90 MMSCMD at home buoyed by Reliance/BP's offshore KG Basin fields output while the LNG imports were low due to the prevailing high import prices. The increased domestic supplies reduced our dependence on high-priced imported LNG and are expected to continue to do so in the short to medium term. Significant investments committed to the E&P sector by ONGC and Reliance/BP in the offshore prospects on the east coast should continue to bear fruit with additional supplies from KG Basin. The drop in LNG imports coincided with gas production ramping up at the difficult fields of Reliance Industries and BP's ultra-deep-water KG-D6 Block in the Krishna Godavari basin and ONGC's U1B deep-water gas located in the KG-DWN 98/2 block on the east coast. Though the ceiling price for gas to be produced from these difficult fields has been raised by 69% to \$6.13/MMBtu, it remains much lower than imported LNG rates.

India's import of LNG fell with global spot LNG prices climbing to record highs amid low stocks, high demand and limited supply of fuel and an increasing domestic natural gas production. Asian spot LNG rates had climbed from \$6.9/MMBtu at the beginning of the fiscal

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to \$17.7/MMBtu in August end. By September end, it had crossed \$25/MMBtu and touched \$56/MMBtu before currently settling at nearer to \$34/MMBtu.

The year has been rather tumultuous for the LNG sector. It is becoming more and more difficult to buy spot cargoes where the price is so uncertain and fluctuates between \$26 and \$56 per MMBtu. According to reports, existing ex-Kochi terminal customers are considering alternative fuels because the viability of taking high high-cost RLNG no longer exists. The high spot price is also hurting terminal utilization at Kochi as well as Dahej. Together with the spot cargo price increase, the shipping costs have been surging, currently it is about \$325,000 per day. According to ship tracking figures from oil analytics firm Vortexa, deliveries to India in November declined to a 33 month low at 1.61 MMT. We believe that LNG delivered at \$10-12 per MMBtu maximum is manageable in our economy, and anything above that will only encourage Indian customers to seek alternative fuels. It is estimated that low LNG import is likely to continue and impact import facilities capacity utilization until gas demand growth exceeds the new domestic gas supply from Reliance and ONGC.

### Infrastructure Development

Infrastructure development has also been a major focus area with gas pipeline grid being established across the country and are at various stages of completion. In February 2021, Prime Minister Mr. Narendra Modi announced that the Government plans to invest ~Rs. 7.5 trillion on oil and gas infrastructure in the next five years.

About 35,000 km natural gas pipeline network across the country has been authorized with the aim to create a national gas grid. 20,239 km of natural gas pipelines are operational (as of September 2021) and 14,930 km are under progress. In February 2021, the government launched Ramanathapuram – Thoothukudi natural gas pipeline. With the completion of the PM Urja Ganga project in the eastern region, several fertiliser plants and refineries will provide a further boost to the

gas demand. Completion of key trunk pipelines like Jagdishpur-Haldia, Kochi-Bangalore, Mehsana-Bhatinda, and the North East grid would facilitate better gas penetration.

The total capacity of operational LNG import terminals is around 42.5 MMT per annum. Petronet LNG's Dahej terminal, the largest among them with 17.5 MMTPA capacity, was operating at 93% utilisation in September, against the 109% recorded in the corresponding month in the previous year.

In February 2021, Petronet LNG announced its plans to increase in its Dahej terminal's capacity by 29% to 22.5 MMTPA to meet



Gas - Sector Growth During Last 5 years		
	2015-16	2020-2021
Gas Consumption	130 mmscmd	167 mmscmd
LNG regasification capacity	21 MMTPA	42.5 MMTPA
CGD gas consumption	17 mmscmd	26 mmscmd
GAs covered	64	228
No. of CNG stations	~1026	~3200
No. of PNG connections	~3 million	~7.9 million
Pipeline network	16,000 km	20,000 km
CGD pipelines-Steel	-	1.09 lakh inch-km
CGD pipelines-MDPE	-	2.19 lakh inch-km

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the rising demand. In July 2021, India's first LNG facility plant was inaugurated at Nagpur, Maharashtra. The petroleum ministry recently released a draft LNG policy that aims to increase the regasification capacity to 70 MMTPA by 2030 and 100 MMTPA by 2040. LNG imports which provide for as much as 50% of India's total gas consumption are likely to increase once other import facilities in the development stage announce completion. Also, as soon as the pipeline evacuation gas infrastructure is completed, capacity utilisation at the Kochi and Dabhol, Mundra and Ennore LNG terminals, which are currently seeing low capacity utilization, is expected to increase significantly, provided the LNG price becomes manageable.

### Regulatory and Policy Push

In 2021, the Government adopted several policies to fulfill the increasing demand for gas as well as to increase the share of gas in the energy basket. It allowed 100% Foreign Direct Investment (FDI) in many segments of the oil and gas sector, including natural gas. It is estimated that these supportive policies would enable the Indian oil and natural gas sector to benefit from an investment of US\$ 206 billion in the next eight to ten years. Besides, the Government itself is planning to invest US\$ 2.86 billion in upstream oil and gas production to double the natural gas production to 60 bcm by 2022. During the year, the Government also announced that it will auction unmonetised large oil and gas fields of ONGC and OIL which should boost production of domestic gas.

A draft LNG policy was shared by the government during 2021 that aims to find ways for LNG adoption in sectors that currently does not use it as a fuel. Also, PNGRB is seeking to put more than 50 city gas distribution licensed areas (that have already exceeded their exclusivity period), including Delhi, Mumbai and large parts of Gujarat, as common carriers and in September 2021. The regulator also floated a draft access code for common carrier or contract carrier natural gas pipelines in June 2021 as the government has been keen on allowing open

access to CGD pipelines in order to increase the competition in the market. Under the new code, the PNGRB has proposed the setting up of a National Gas Grid Management Services or "NGGMS" or a Transmission system operator (TSO) or Independent System Operator (ISO) which would be an entity appointed by the Board or by the government to regulate access to a common carrier or contract carrier so as to ensure fair trade and competition amongst entities under these regulations to ensure non-discriminatory transportation access, capacity reporting monitoring, operation planning and control etc.

The PNGRB's draft access code has elicited concerns from CGD companies which have contended that any infringement on the infrastructure exclusivity of an entity is not appropriate and will severely harm the interests of the CGD entities who are spending huge amounts on creating infrastructure.

### Gas Prices

Global natural gas prices have been on an increasing trend since the start of the financial year 2021-22, led by an extended winter season till March 2021, creating an imbalance in the supply and demand of natural gas, and resulting in lower levels of storage for summers. High competition for LNG cargoes, low storage availability, and continued supply-side constraints are a few more key reasons for the same. Additionally, demand from China, which has outpaced Japan as the highest gas importing nation, and Europe has surpassed the supply, leading to stocks dwindling to low levels. The increase in gas prices globally was reflected in a 62% year-on-year rise in the domestic natural gas price to \$2.90/MMTBU for domestic gas and \$6.13/MMBTU for difficult gas for Oct 2021-Mar 2022 under the domestic gas price regime. The domestic gas prices for the next control period could increase further given the ongoing spike in the global prices. The gas price increase has already been reflected in the hike in both CNG and PNG rates across entities and an increase in the industrial CNG rates in November and December 2021. On the supply



side of LNG, it becomes so critical to mitigating the risk of high LNG spot price by maintaining a portfolio mix of long-term, medium-term and spot cargoes. More importantly, we believe it would be prudent to hedge long-term contracts with pricing linked to Henry Hub, Brent and JKM markers.

The discovery of market-driven prices for natural gas has been one of the most important developments of 2021. India's first gas exchange Indian Gas Exchange (IGX) which was set up in June 2020 has allowed the price discovery on the basis of independent market forces with monthly traded quantity growing to 7.8 lakh MMBTU in just a few months. The prices on IGX dropped to a low of \$6.1/mmBtu in April 2021 when spot LNG was at \$10/mmBtu. IGX contract prices have since consistently increased in tandem with the rise in crude oil price and LNG in international markets but have remained lower than the spot LNG prices in the range of \$5 to \$20/mmBtu. As global LNG prices are ruling high, industrial fuel consumers in India are mitigating the adverse impact on them to some extent by increasing the volume of purchases on IGX. In October 2021 when spot LNG prices touched a high of \$35/mmBtu in line with the increase in Brent crude price, IGX prices remained considerably lower at \$18.7/mmBtu.

Also, out of India's total 42.5 MMTPA LNG capacity, 24.3 mmtpa is utilised and about 50-60% capacity is booked on a long-term basis, which leaves close to 40% of capacity for spot RLNG. In comparison, countries such as Japan and South Korea have 80% of LNG contracted in long term. In August 2021, the Government allowed domestic producers of gas to sell 10% of their annual production on exchanges which should increase the volumes traded on the exchange going further. The companies would like to bring more acreage under production as they will get market price for their gas compared to the lower administered price of \$2.9/mmBtu. With more and more sellers and buyers trading on the exchange, it will help in developing India in becoming a more mature and competitive gas market.

### Future Outlook- Growth Drivers

India's outlook for the natural gas sector looks very exciting on the back of rising domestic production, development of missing infrastructure links including pipeline connectivity and additional LNG terminals and supportive regulatory and environmental policies. Gas demand is expected to be driven by the increasing investment by the government in the sector (\$118 billion by 2024) and the increasing CGD spread (from 20% to 70% in the past few years). According to a recent estimate by IEA, natural gas consumption is forecast to increase at a CAGR of 4.18% to 143.08 million tonnes by 2040 from 58.10 million tonnes in 2018.

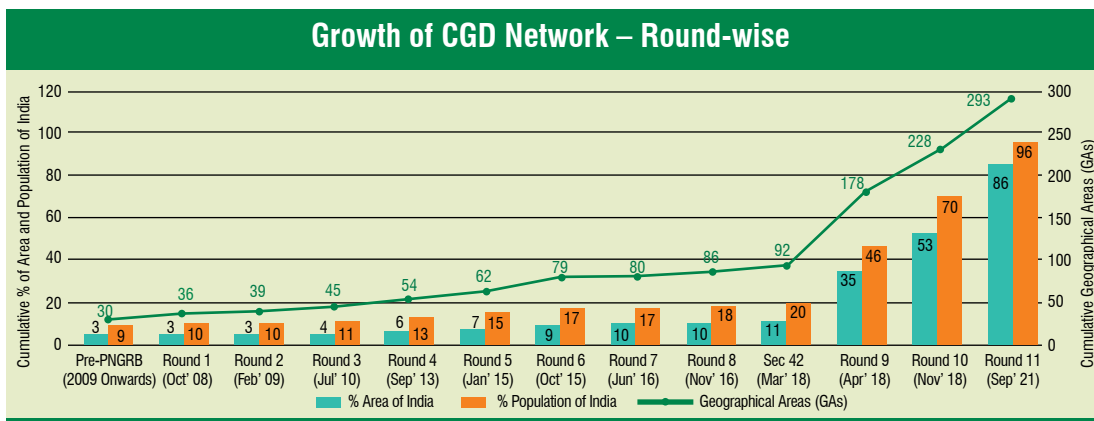
Sector-wise, CGD and small industries are expected to be the key drivers of demand. New industrial clusters/belts, like, PCPIRS, NIMZ, Mega Food Parks etc. currently being developed are expected to drive gas demand in the future. Let's take a look at each of the consuming sectors to see where the growth could from...

### City Gas Distribution

Gas has already reached 228 Geographical Areas covering 53% of the total area and 70% of the country's population. After the eleventh round in which 65 more GAs are on offer, the gas would be available to 96% of India's population covering 86% of the area. With lower emissions and lower prices of gas vis-à-vis alternate fuels such as petrol and diesel we are quite optimistic about the CGD sector given the positives during the last couple of years; such as a ban on dirty fuel, like, pet coke and furnace oil in NCR and some other States (to be followed pan India hopefully), a very well-received Tenth and Eleventh round of bidding including some concrete steps being taken on establishing LNG corridor (setting up 1,000 LNG stations to replace diesel and petrol in long haul vehicles) etc. With all this, the CGD sector is already showing signs that it could be a potential game-changer with its share in total gas consumption increasing to 27% in just

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a short time. India’s commitment to the Paris COP21 and Glasgow COP26 is expected to give the gas industry a further boost because of environmental considerations.

There is little doubt that given the right ecosystem, growth rates could accelerate further given infrastructure and supply systems develop in an expected manner. If everything goes according to plan and commitments, and the PNGRB is able to monitor and course-correct, we can expect significant demand from this segment to replace the dirty and expensive fuels. However, e-mobility is likely to impact CNG growth in urban areas - mainly public transport.

### Industrial sector/Petrochemicals/Refineries/ Sponge Iron/Steel

The small and medium industries could emerge as a big consuming sector for the CGD segment in medium to long term. Major gas demand is expected to come from industries such as steel (a blast furnace), oil refineries, long-haul transport, and heating and cooling requirement. The absence of pipeline connectivity in parts of the eastern sector and unavailability of gas which was hitherto a restricting factor in the use of gas in these areas is about to be eased with the completion of pipeline infrastructure and that could be the facilitating factor for growing demand from this region.

### Power & Fertiliser

The share of gas in power generation has declined over the years from as high as 40% to

just 18% currently. Given the current scenario, there are no new power generation capacities being planned on gas because of the declining PLFs of the gas-based power plants due to high gas prices vis-à-vis alternative fuels such as coal. With gas prices not sustainable for this sector, it is uncertain that power sector demand for gas will increase in near future. Also, renewables, like solar and wind energy, with dropping costs and improved technology could impact both gas & coal-based generation. Similarly, the fertilizer sector, currently the top consumer of gas, is also likely to grow slowly - the sector growth can only come on the back of revamping of closed units and conversion of naphtha-based plants when gas supplies become available from the Urja Ganga project for these projects to revive them. The recently inaugurated defunct Gorakhpur plant in Uttar Pradesh is the first major beneficiary of the massive Urja Ganga Pipeline Project in the fertilizer sector.

All in all, despite the big jolt to the economy due to COVID-19, it was not such a bad year for the natural gas sector. The sector survived on the back of rising domestic production and increasing demand for gas due to its inherent clean properties and lower domestic gas prices vis-à-vis competing fuels. Hopefully, the next few years will be even brighter more brighter for gas with the policymaker’s, regulator’s and stakeholders’ sustained efforts to support and push its use so as to achieve a 15% percent share in the energy basket by 2030.

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