

Natural Gas H1-FY21 Update

October 22nd, 2020 | Industry Research

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Domestic Natural Gas production, imports and consumption during H1-FY21

Table 1: Domestic Production, Consumption and Imports of Natural Gas (Unit: MMSCM)

			Change (y-o-y)	
	2019-20	2020-21	2019-20	2020-21
Production	16,005	13,954	-1.5%	-12.8%
Imports	16,417	15,919	8.9%	-3.0%
Consumption	31,955	29,411	3.3%	-8.0%

Source: PPAC

Domestic production from onshore fields was around 34% while CBM fields contributed around 2% of the total natural gas production during H1-FY21. Major part of the output however was from the offshore gas fields which constituted around 64% of the total domestic natural gas production. NOCs* have contributed around 88% of the total domestic output whereas PSC* fields have contributed the remaining around 12%.

* NOCs: National Oil Company PSC: Production Sharing Contract

Domestic natural gas production has declined sharply by 12.8% during H1-FY21 as compared with the 1.5% fall registered during H1-FY20. Cumulative fall in production is mainly due to restricted gas off take by consumers due to the on-going COVID-19 situation. Cumulative production was also down due to bandh/blockade by local people /union /association after the blow out at the Baghjan well.

Consumption of natural gas fell sharply by 8% on a y-o-y basis during H1-FY21. Natural gas is used as a fuel (energy) and as a feedstock (non-energy) by the respective end user industries. Demand for natural gas in the domestic market is largely dependent on the fertilizer (32%), power (20%), CGD entities (11%) industries and other miscellaneous industries like petrochemicals, teas industry, LPG shrinkage etc. Except in the case of urea production, there has been a fall in power generation, drop in the demand for CNG refuelling, fall in refineries throughput and fall in petrochemical production during H1-FY21. Consumption of natural gas at the moment has recovered upto 92% of its pre-covid levels.

Imports of natural gas in the form of LNG fell by 3% as compared with the 8.9% increase during H1-FY20. Import dependency based on

consumption has increased to 54.1% during H1-FY21 as compared with it being 51.4% during H1-FY20. India has imported LNG from Qatar, Nigeria, UAE and Nigeria.

Table 2: Monthly trend in Natural Gas Demand-Supply and Trade (Unit: MMSCM)

	Apr-20	May-20	Jun-20	Jul-20	Aug-20	Sep-20
Production	2,161	2,300	2,324	2,443	2,432	2,294
y-o-y	-18.6%	-16.0%	-11.8%	-10.1%	-9.5%	-10.7%
LNG import	1,947	2,383	2,673	2,963	2,976	2,972
y-o-y	-29.4%	0.5%	-6.9%	6.0%	5.4%	6.2%
Consumption	4,013	4,598	4,923	5,333	5,339	5,199
y-o-y	-24.8%	-8.6%	-9.3%	-1.8%	-1.7%	-1.7%

Source: PPAC

The overall macros of the natural gas industry are still below its pre-COVID levels but on the other hand the situation seems to be improving with the subsequent unlocking of the economy. In September'20 the imports of LNG has increased by 6.2% and consumption has declined by only 1.7% on a y-o-y basis.

Review of the Natural Gas Infrastructure

Natural gas infrastructure mainly consists of (1) R-LNG terminals, (2) Gas Pipelines and (3) City Gas Distribution (CGD) networks.

R-LNG

R-LNG is a process of converting liquefied natural gas (LNG) back to natural gas. The process includes liquefaction of natural gas and its transportation in liquefied form through specialized carriers to the destination, that is the, RLNG terminal where it is converted back into gaseous state. The gas is converted to liquid form for ease of storage or transport. It takes up about 1/600th the volume of natural gas in the gaseous state. This makes LNG cost efficient to transport over long distances where pipelines do not exist. Overall capacity utilisation of R-LNG terminals is around 58%.

Table 3: Existing R-LNG Terminals and Capacity Utilisation (Unit: MMTPA)

LNG Terminal	Entity/Promoters	Capacity	Capacity Utilisation **
Dahej	Petronet LNG Limited	17.5	87.7
Hazira	Shell Energy Pvt Limited	5	95.3
Dabhol Ratnagiri*	Konkan LNG Private Limited	5	25.1
Kochi	Petronet LNG Limited	5	14.7
Ennore	Indian Oil Corporation Limited	5	10.2
Mundra	GSPC LNG Limited	5	33.9
Total Existing Capacity (as on 01.10.2020)		42.5	

Source: PPAC

* To increase to 5 MMTPA with breakwater only HP stream of capacity of 2.9 MMTPA is commissioned.

**April-August (%)

Natural Gas pipelines

Gas pipelines are the most cost effective and safest mode of transportation of natural gas to its end users (power generators and urea manufacturers).

The natural gas is primarily sourced from KG-D6, Mumbai offshore, Cambay Basin, Ravva Offshore, KG Basin, Cauvery basin and through imports of LNG.

Table 4: Major natural gas pipeline network as on 30.06.2020

	GAIL	GSPL	PIL	IOCL	AGCL	RGPL	GGL	DFPCL	ONGC	GIGL	GITL	Others*	Total
Operational													
Length	8,241	2,265	1,460	132	105	312	73	42	24	-	-	-	12,654
Capacity	171.6	43	85	20	2.4	3.5	5.1	0.7	6	-	-	-	337.3
Partially Commissioned#													
Length	3,533	-	-	23	-	-	-	-	-	442	364	-	4,362
Total Operating													
Length	11,774	2,265	1,460	155	105	312	73	42	24	442	364	-	17,016
Under Construction													
Length	6,352	-	-	1,398	-	-	-	-	-	2,335	1,678	3,780	15,543
Overall Total													
Length	18,126	2,265	1,460	1,553	105	312	73	42	24	2,777	2,042	3,780	32,559

Source: PPAC, PNRGB

#operating length, *Others-APGDC, HEPL, IGGL, IMC, Consortium of H-Energy

Gas pipeline grid determines the structure of the gas market and its development. Therefore, an interconnected National Gas Grid has been envisaged to ensure the adequate availability and equitable distribution of natural gas in all parts of the country.

At present, there are about 17,016 km of Natural Gas pipelines which is operational in the country. In order to make available natural gas across the country, additional pipelines are under construction to complete the National Gas Grid. This would ensure easy availability of natural gas across all regions and also potentially help to achieve uniform economic and social progress.

PNRGB has notified a draft amendment to implement unified tariffs for natural gas grid. The regulator has proposed to calculate unified tariffs on a fortnightly basis by taking sum product of actual/contractual volumes- it will be then split on a volume weighted basis across two zones and charged to the end user consumer across the country. any surplus or deficit will be settled between them.

City Gas Distribution

City Gas Distribution (CGD) is an important integral part of any city. CGDs are networks and pipelines for carrying natural gas and petroleum. Setting of CGD network is authorised by the Petroleum and Natural Gas Regulatory Board (PNGRB) under the Petroleum and Natural Gas Regulatory Board (PNGRB) Act. The PNGRB oversees the CGD bidding rounds where the successful entities are authorised to lay down the CGD infrastructure in a specified Geographical Area (GA) of the country and operate it.

CGD entities supply fuel in the form of Compressed Natural Gas (CNG) and Piped Natural Gas (PNG) to various consumers for industrial, domestic, commercial and transportation purposes. Gas supplied to industrial, domestic and commercial customers is known as PNG, whereas gas in the form of CNG is dispensed through CNG refuelling stations to CNG fuelled vehicles (transportation).

To promote the development of CGD network, the Government has accorded the priority in domestic gas allocation to PNG (Domestic) and CNG (Transport) segments. It has been decided to meet 100% gas requirement of CNG and PNG segments through supply of domestic gas which is cheaper than imported gas.

- CNG

Table 5: CNG Stations up to August 2020

State	As on 1.04.2020	As on 1.09.2020	Increase in absolute terms
Gujarat	636	686	50
Delhi	419	430	11
Maharashtra	375	393	18
Andhra Pradesh & Telangana	132	140	8
Rajasthan	16	32	16
Uttar Pradesh	307	325	18
Tripura	14	10	-4
Madhya Pradesh	62	66	4
Haryana	103	80	-23
West Bengal	10	4	-6
Karnataka	23	30	7
Chandigarh	11	6	-5
Daman & Diu and Dadra and Nagar Haveli	15	11	-4
Kerala	8	8	0
Odisha	19	19	0
Punjab	33	53	20
Uttarakand	5	5	0
Assam	1	1	0
Bihar	8	9	1
Goa	2	2	0
Jharkhand	8	13	5
All India	2,207	2,323	116
Change(+/-)			5.3%

Source: PPAC, CARE Ratings

As per table no 5, amid the country facing the COVID-19 pandemic, all over India there has been an increase of additional 116 CNG refuelling stations across all states during FY21 (April-August) as compared to the CNG stations present during the start of the fiscal with Gujarat leading with 50 new stations. Nearly 79% of India's CNG stations are concentrated in Delhi, Gujarat (including Dadra & Nagar Haveli and Daman and Diu), UP and Maharashtra. Some of the CNG stations seemed to have rendered shut due to the fall in demand of CNG refuelling due to the pandemic.

CNG is 60% cheaper than petrol and 45% cheaper than diesel and given the volatility in petrol-diesel prices more vehicle users are making a shift to CNG powered vehicles.

- PNG

PNG is supplied to residential, commercial and industrial users through extensive network of pipelines. Gas sales to commercial and industrial users are achieved through long-term gas sales agreement, whereas residential users are charged on usage basis. PNG is safer than LPG and since it is lighter than air, it dissipates immediately in the air in case of leak. The flow of PNG can be easily controlled by various safety checks/valves installed in the system. As PNG is supplied through a pipe, it offers uninterrupted supply round-the-clock and is space economical as it does not occupy space which in the kitchen which was initially reserves for storing cylinders.

Domestic connections pertain to residential households. They use gas primarily for domestic cooking or heating purpose. The piped gas is increasingly being seen as an attractive alternative to the domestic LPG cylinders as is cheaper by 40% as compared to the market price of LPG and the price of PNG almost matches with that of subsidised LPG (based on prices in Delhi).

Commercial connections are supplied to customers who are proprietors or partnership entities that utilize PNG exclusively for commercial purposes. These set of customers comprises of hotels, restaurants, dairies, educational institutes etc.

Industrial connections are large-volume customers from the industrial sector. This set of customers comprises of textile pharmaceuticals, glass, chemicals, pulp and paper etc. They constitute a major portion of the total gas sales. They utilize gas for a variety of purposes such as heating, cooling, power production and as a process feedstock. Supplying PNG to industrial users can further be categorized into large-scale industries and small/medium-scale industries.

Table 6: Number of Piped Natural Gas connection data up to August 2020

	Domestic	Commercial	Industrial
Andhra Pradesh	1,34,552	212	18
Assam	35,173	1,145	404
Bihar	14,112	8	0
Chandigarh	1,10,762	24	2
Dadra and Nagar Haveli	7,091	59	55
Delhi	9,30,893	2,392	1,402
Goa	3,927	0	2
Gujarat	27,75,544	23,146	5,601
Haryana	1,02,462	198	564
Jharkhand	15,737	0	0
Karnataka	1,76,295	308	160
Kerala	41,688	8	7
Madhya Pradesh	87,378	167	257
Maharashtra	17,82,130	4,329	331
Odisha	10,684	0	0
Punjab	7,681	29	24
Rajasthan	16,897	17	15
Telangana	91,152	27	53
Tripura	45,909	442	60
UT part of Daman & Diu	3,479	25	20
Uttar Pradesh	7,56,735	1,407	2,115

Uttarakand	12,051	25	27
Total	71,62,332	33,968	11,117

Source: PPAC

As on 1.09.2020 (72.07 lakh connections) the total number of PNG connections have increased by 18% during FY21 (April-August) as compared with the PNG connections on 1.04.2020 (there were 61.09 lakh connections in the start of the fiscal year). Domestic connections, commercial connections and industrial connections have increased sharply by 18%, 10.9% and 8.4% respectively. Out of the total PNG connections domestic connections constitute 99.4% share followed by commercial connections having a 0.5% share and industrial connections having a 0.2% share.

CGD entities had resumed worked in green and orange zones once government announced relaxations came into effect 15th April 2020 onwards. The government is planning to come up with the 11th CGD bidding round very soon.

Domestic Gas Price

The government has revised the domestic natural gas price as per the New Domestic Gas policy, 2014. The revised price will be prevalent from October 1st 2020 till 31st March 2021 i.e. H2-FY21. The gas price for locally produced fields has been revised to USD 1.79/mmBtu from USD 2.39/mmBtu resulting in a 25.1% decrease and the ceiling price for gas to be produced from difficult fields has also fallen to 4.06 USD /mmBtu from USD 5.61/mmBtu resulting in a 27.6% decrease.

Prices of domestic natural gas have fallen third time in a row now and prices which will be prevalent H2-FY21 onwards will be the lowest gas price ever recorded under the New Domestic gas policy.

The domestic natural gas price is determined by the formula which considers the volumes and price of natural gas in USA (Henry Hub), UK (New Balancing Point), Canada (Alberta Gas) and Russia (Russian Natural Gas). Prices of gas in these hubs are market linked.

Table 7: Domestic Natural Gas Prices (Unit: USD/mmBtu) on a Gross Calorific Basis (GCV) Basis

	Domestic Natural Gas Price	Change (+/-)
1 st Nov'14 – 31 st Mar'15	5.05	-
1 st Apr'15 – 30 th Sep'15	4.66	-7.7%
1 st Oct'15 – 31 st Mar'16	3.82	-18.0%
1 st Apr'16 – 30 th Sep'16	3.06	-19.9%
1 st Oct'16 – 31 st Mar'17	2.50	-18.3%
1 st Apr'17 – 30 th Sep'17	2.48	-0.8%
1 st Oct'17 – 31 st Mar'18	2.89	16.5%
1 st Apr'18 – 30 th Sep'18	3.06	5.9%
1 st Oct'18 – 31 st Mar'19	3.36	9.8%
1 st Apr'19 – 30 th Sep'19	3.69	9.8%
1 st Oct'19 – 31 st Mar'20	3.23	-12.5%
1 st Apr'20 – 30 th Sep'20	2.39	-26.0%
1 st Oct'20 – 31 st Mar'21	1.79	-25.1%

Source: PPAC

The Government also implemented the decision to allow marketing and pricing freedom for gas produced from High Pressure High Temperature, Deepwater and Ultra Deepwater areas, with a ceiling price arrived at on the basis of

landed price of alternative fuels with a view to incentivize monetization of domestic gas resources in difficult areas. This means the producers have a maximum amount/ ceiling price which they can charge for the gas produced from difficult fields.

Table 8: Domestic Gas price for gas produced from difficult fields (Unit: USD/mmBtu) on a Gross Calorific Value (GCV) basis

	Ceiling Prices for Gas from HP-HT/Deep/Ultradeepwater	Change (+/-)
1 st Apr'16 – 30 th Sep'16	6.61	-
1 st Oct'16 – 31 st Mar'17	5.30	-19.8%
1 st Apr'17 – 30 th Sep'17	5.56	4.9%
1 st Oct'17 – 31 st Mar'18	6.30	13.3%
1 st Apr'18 – 30 th Sep'18	6.78	7.6%
1 st Oct'18 – 31 st Mar'19	7.67	13.1%
1 st Apr'19 – 30 th Sep'19	9.32	21.5%
1 st Oct'18 – 31 st Mar'20	8.43	-9.5%
1 st Apr'20 – 30 th Sep'20	5.61	-33.5%
1 st Oct'20 – 31 st Mar'21	4.06	-27.6%

Source: PPAC

Prices of R-LNG are usually contract based and are linked with the global crude oil prices. However, soon natural gas end users could be taking delivery on India's first gas exchange which has just been launched month ago. Prices of LNG will then be based on market demand-supply.

Cabinet approves 'Natural Gas Marketing Reforms'

The government has allowed complete marketing freedom for natural gas produced from non-regulated fields with the Union Cabinet approving a standard e-bidding procedure to discover price of gas from new production areas and high-pressure, high-temperature fields.

The policy aims to provide standard procedure for sale of natural gas in a transparent and competitive manner to discover market price by issuing guidelines for sale by contractor through e-bidding. It is slated to bring uniformity in the bidding process across the various contractual regimes and policies in order to avoid ambiguity and contribute towards the ease of doing business & more competition in marketing of gas. Under the new gas price discovery mechanism, the producing companies will not be allowed participate in the bidding process but its affiliate companies can participate. The policy will also grant marketing freedom to the Field Development Plans (FDPs) of those Blocks in which Production Sharing Contracts already provide pricing freedom. All discoveries and field development plans approved after February 28th, 2019 have been given complete market and pricing freedom.

This however won't have any impact on the existing pricing formula (New Domestic gas policy) for natural gas under the administered price mechanism, which the government came out with in November 2014 (which is applicable to gas produced from nomination fields).

Apprehensions regarding current domestic gas price

With the current domestic gas price falling far below the breakeven price, exploration of gas is no longer lucrative for upstream gas companies. As mentioned earlier, the domestic gas price formula is dependent on rates from mature

markets and a collapse in the global gas market due to the COVID-19 pandemic has sharply brought down the domestic price as well. Upstream players could potentially be incurring losses with the current gas price. It is speculated that the new formula could have a floor price which could be linked to some international benchmark.

Outlook for FY21

The gross production of domestic natural gas is to fall by 10.6% during FY21. Production has fallen by 0.7% during FY19, 5.9% during FY20 and by 12.8% during H1-FY21.

- E&P prospects in FY21 do not look promising as no company would aggressively want to increase production or get into high risk projects with such a low gas price.
- Currently (H2-FY21) the price for gas produced from local fields has been revised to USD 1.79/mmBtu which is the lowest price ever set as the New Domestic Gas Policy and is even below the breakeven point for most fields. Unlike crude oil prices which are dependent on market forces of demand and supply, domestic natural gas prices will remain fixed till 31st March 2021.

Consumption of Natural Gas is to fall by 3.2% by the end of FY21. Domestic natural gas consumption had grown by 2.7% during FY19, 5.2% during FY20 and fallen by 8% during H1-FY21.

- The demand for natural gas is to be subdued on account of subdued sales of CNG, weaker demand from gas-based power plants on account of fall in electricity demand and a cut in refinery throughput by oil refiners.
- Demand only to be supported by the increase in production of urea. Sales of urea have been increasing on account of a good kharif season.
- Use of natural gas in the form of PNG will remain stable but it will not increase incrementally due to the timely completion of pipeline and city gas distribution projects as per the timelines mentioned in the subsequent CGD bidding rounds.

Imports of natural gas in the form of LNG are to fall by 2% due to the fall in domestic demand for natural gas. Up till now LNG imports have fallen by 3% during H1-FY21.

- LNG imports will only grow to the extent of plugging in the structural gap between gas demand and domestic production.

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