Research

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SectorVector

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Reading the topical trends

Ruptured line

High prices seen robbing gas of its edge among fuels in India

Global spot prices of natural gas have been on a rally since August 2020, after touching an all-time low of $2 per mmBtu in April that year.

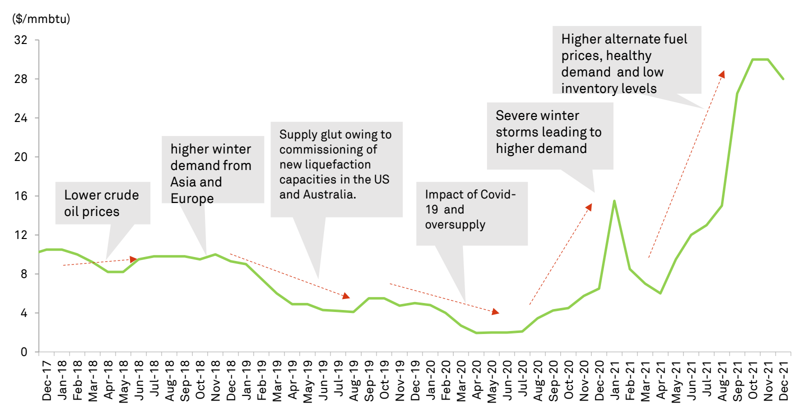
The gas market has tightened since then, due to a combination of robust growth in demand as economies recover from the lockdowns, extreme weather episodes that have increased gas consumption, and tighter-than-expected supply as a series of outages in the US hampered gas production and export capacity.

The constraints, coupled with an unusually cold winter in Europe, pushed prices to a decadal high of over $30 per mmBtu in the fourth quarter of 2021.

Coming in this milieu, an escalation in Russia-Ukraine tensions can only worsen things in fiscal 2023. Although prices in Europe eased slightly in January 2022 to $22-23 per mmBtu from peaks logged in November and December, coming months are expected to see more volatility amid heightened geopolitical tensions — especially between Russia and Ukraine — and linked uncertainty, which will keep prices elevated (though lower than last year's average).

Also, Germany paused the certification process for the Nord Stream 2 pipeline in November, as a result of which we do not expect any significant increase in supply from Russia to Europe. With demand from Europe holding steady, there would be upward pressure on prices.

Spot gas prices reach record highs



Source: Industry, CRISIL Research

Demand from China, Europe and India bounced back strongly last year

In calendar year 2020, global demand for natural gas fell 1.9% owing to Covid-19 induced lockdowns.

In calendar 2021, global gas demand rebounded ~3.5% owing to low winter temperatures in Europe, the US, and Asia, which supported higher offtake. Demand from China, Europe and India saw a particularly strong bounce-back. This, together with higher coal prices and lower production of renewables, increased usage of natural gas.

In calendar 2022, we expect the recovery in global gas demand to continue, albeit at a slower pace compared with last year (assuming average weather conditions), and increase 1-2%.

Gas demand in India, however, is expected to increase 12-14% in fiscal 2023.

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Global gas demand on path of recovery

Share in global demand	2020				2021		
	Q1	Q2	Q3	Q4	Q1	Q2	Q3
(22%)	-3%	0%	0%	-4%	-1%	2%	2%
(14%)	-4%	-13%	1%	2%	9%	24%	-3%
(9%)	2%	5%	4%	10%	19%	28%	20%
(1%)	2%	-10%	3%	6%	10%	26%	32%*
(1%)	6%	1%	-8%	3%	5%	5%	16%

*Note: Growth is on-year, * China's imports*
Source: Industry, CRISIL Research

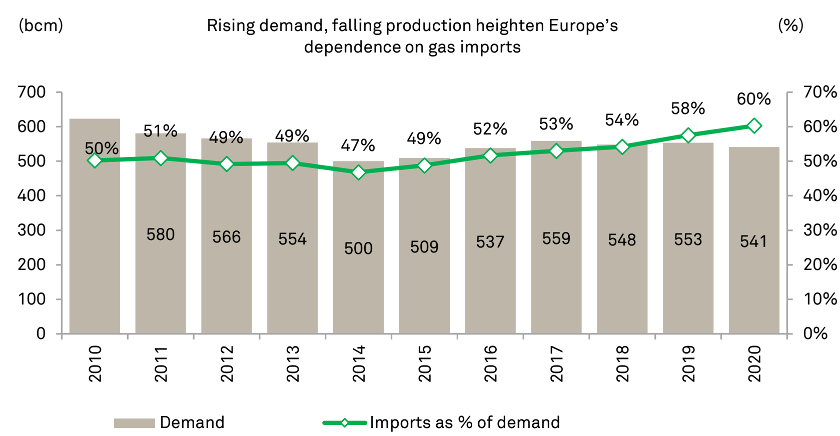
Incremental supply has lagged behind demand growth, resulting in further increase in prices

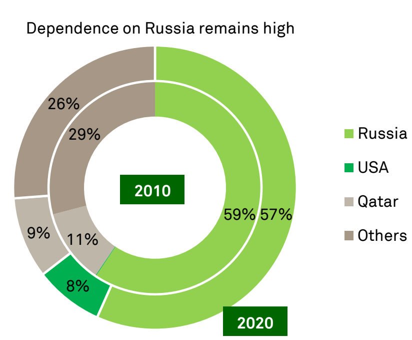
Europe's dependence on imports increased nearly 10% over the past decade amid falling domestic production.

Several North Sea gas deposits are running dry, and Europe's top domestic producer of natural gas — the Netherlands — began phasing out its main gas field Groningen in 2018, which is due to close in mid-2022. This leaves Europe increasingly dependent on gas imports. Currently, Europe gets ~57% of its gas requirement from Russia.

Even in 2021, European natural gas supply continued to tighten over the summer, amid lower liquefied natural gas (LNG) inflow, declining domestic production, and moderate on-year growth in pipeline deliveries.

Rising demand, falling production shore up Europe's dependence on gas imports





Source: BP stats, CRISIL Research

Russia has limited pipeline exports to Europe because of high domestic demand, output disruptions, and high LNG demand from Asia.

To be sure, Europe's share in Russia's total exports is a whopping 78%, while that of Asian countries is 11%. In the past, when Europe's incremental demand outpaced available supply, Russia largely met the balance requirement.

In calendar 2021, however, Russia supplied less than the incremental European demand, with its exports in the first nine months increasing a mere 2% over the 2019 level as against ~4% increase in demand.

Delay in approval of the Nord Stream 2 pipeline amid political tensions between Russia and Europe could crunch the availability of imported gas in Europe further in near future.

Across the Atlantic, US natural gas production also grew slower in the first nine months of 2021, at ~0.4% on-year, due to storm-related production cuts in the Gulf of Mexico. This, in turn, led to higher prices even in the US market.

Incremental supply is not keeping up with demand growth

	2020				2021		
	Q1	Q2	Q3	Q4	Q1	Q2	Q3
 (24%)	7%	-2%	-2%	-4%	-6%	4%	3%
 (17%)	-10%	-18%	-7%	-1%	10%	27%	15%
 (6%)	-7%	-10%	-3%	-8%	-10%	-11%	-15%

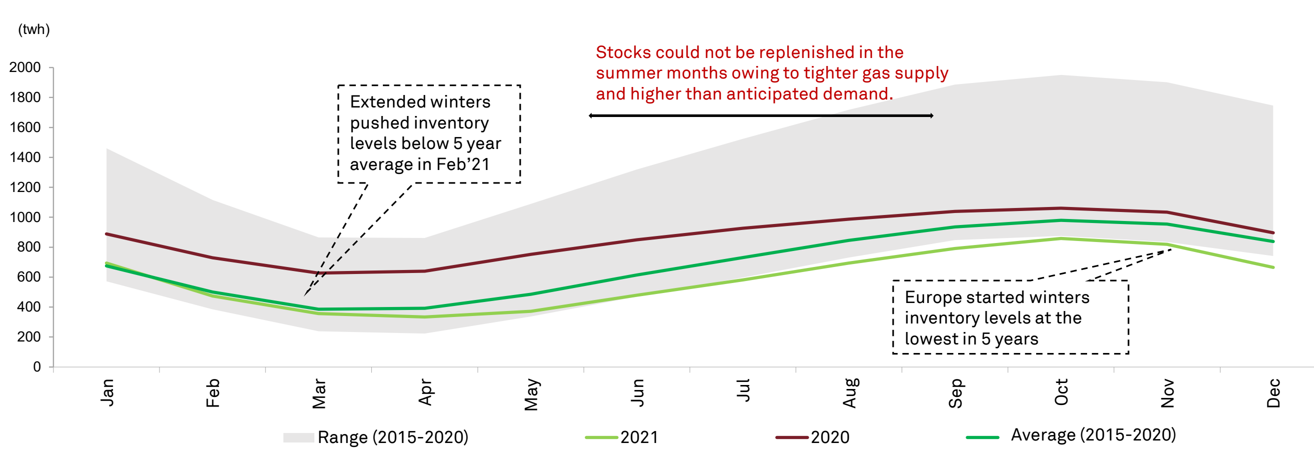
Source: Industry, CRISIL Research

Healthy demand, lower supply, and harsh weather conditions have pushed European inventory levels below the five-year average

Key gas consumers have underground storage capacities and LNG storage terminals for inventory.

Typically, countries work towards increasing their storage levels during summer months, when LNG prices are lower, so they can meet the increased demand during winter, when LNG prices spike due to higher demand and shipping rates, and adverse weather conditions.

Lower storage levels could increase primary gas supply requirements in CY22

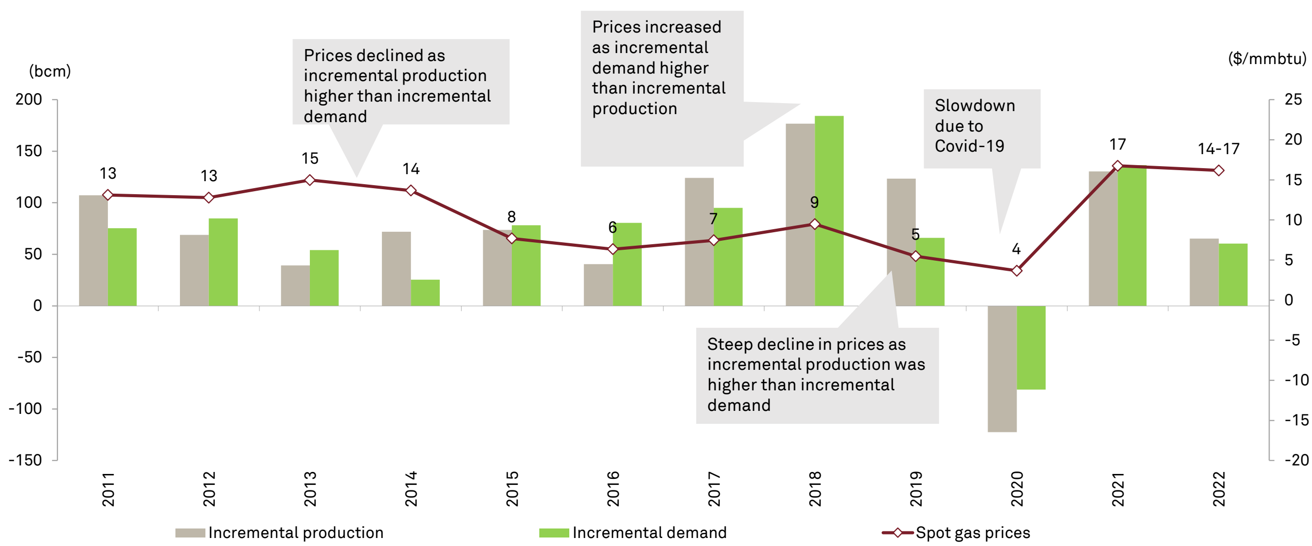


Source: IGU, CRISIL Research

In 2021, European gas reserves were lower than the levels typically observed in the winter season, thereby pushing gas prices higher.

Even in January 2022, natural gas inventories were at the five-year average and are expected to remain lower than last year's inventory levels as of March-end. However, requirement to replenish inventories will be high and will keep spot gas prices elevated.

Lower inventory and tight supply pushed spot LNG prices to a decadal high in 2021; prices may remain firm in the first half amid geopolitical tensions and lingering winter impact



After touching a decadal low of $3.7 per mmBtu in 2020, spot gas prices averaged a decadal high $17 per mmBtu in 2021 owing to the abovementioned reasons.

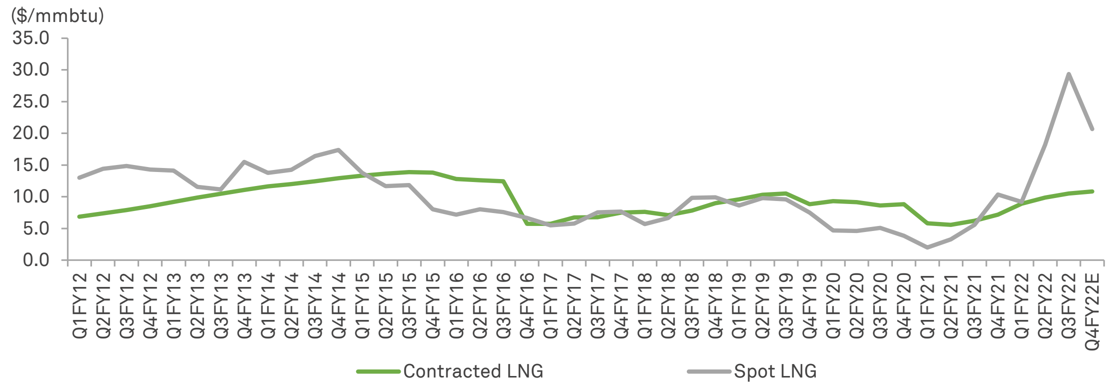
In the first quarter of 2022, as peak heating season demand starts to wane, gas prices are expected to see some correction, but will remain above $20 per mmBtu. In the second half of 2022, prices are likely to see correction with expected improvement in supply. The 2022 average, though, would continue to be near decadal highs.

Contracted LNG prices rise over 60% in fiscal 2022, to remain elevated in fiscal 2023

Contracted LNG prices are formula-driven, based on average crude oil price (Dated Brent) of the preceding three months.

In the first half of fiscal 2022, contracted LNG prices increased by a whopping 65% to ~$9.4 per mmBtu owing to a steep rise in crude oil prices. In the second half of fiscal 2022, contracted LNG prices were estimated to increase further, owing to a steep rise in crude oil prices, averaging around $10-11 per mmBtu for the year. In fiscal 2023, we expect prices to remain elevated.

Contracted LNG prices on uptrend, following crude oil prices



Source: Industry, CRISIL Research

Half of India's gas requirement met through imports

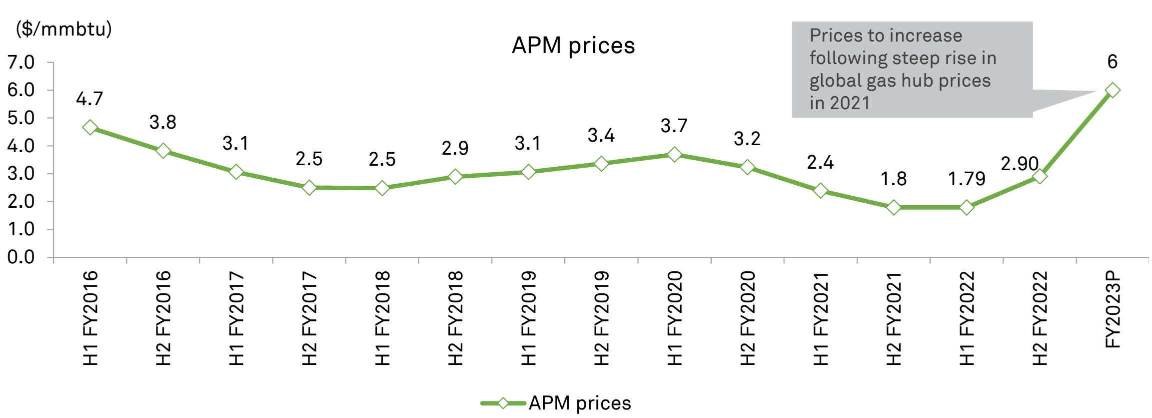
Nearly 50% of India's gas demand is dependent on imports met through a blend of contracted LNG and spot LNG. The remaining 50% of India's gas requirement is met domestically. While the impact of increase in LNG prices is evident in fiscal 2022 thus far, the increase in domestic gas prices would be reflective in fiscal 2023. Domestic gas prices are based on average gas price in the US, Europe, Canada, and Russia markets, and are passed on with a lag of six months.

After increasing 62% in the second half of fiscal 2022 compared with the first half, domestic gas prices are set to increase ~100% next fiscal

Domestic gas prices are estimated to average $2.3 per mmBtu in fiscal 2022 compared with $2.09 per mmBtu in fiscal 2021. For the first half of fiscal 2022, domestic natural gas price was at $1.79 per mmBtu due to lower prices at international gas hubs as a result of supply glut and the spread of Covid-19. However, with recovery in demand and rise in prices on international hubs, prices in the second half have settled at the $2.9 per mmBtu mark.

In fiscal 2023, domestic gas prices are expected to rise significantly owing to a steep rise in international hub prices as seen in calendar year 2021 amid lower inventory levels, energy crisis in Europe and China, and supply constraints.

Higher benchmark prices will lead to higher domestic gas prices in fiscal 2023



Source: PPAC, Industry, CRISIL Research

Overall, around 50% of domestic gas requirement is met through imports. However, it differs on a sectoral level.

In sectors such as fertiliser, import dependence is high at ~60%. At the other end, in sectors such as city gas distribution (CGD) — specifically compressed natural gas (CNG) and domestic piped natural gas (PNG) — dependence on imports is close to negligible given that these segments get the first priority in domestic gas. Even domestic prices are set to increase next fiscal.

Although these prices augur well for oil exploration and production (E&P), CGD entities are expected to be affected as domestic prices of CNG and PNG are expected to rise, which would reduce the competitiveness of CNG and domestic PNG compared with competing fuels.

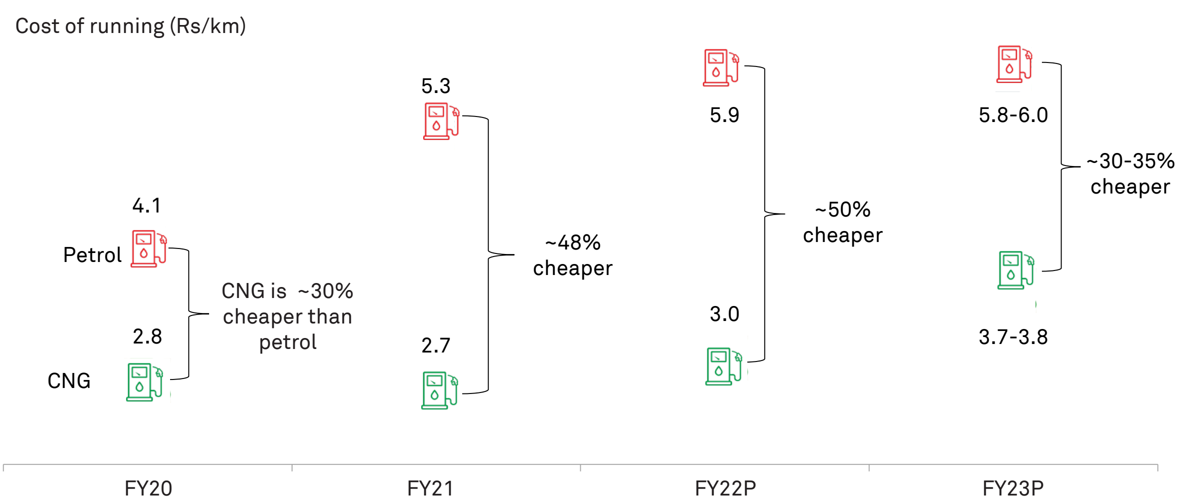
CNG competitiveness to dip 10% next fiscal; domestic PNG and LPG to cost the same

In fiscal 2021, CNG enjoyed ~48% price benefit over petrol. Even at current Delhi prices, in January 2022 — petrol at Rs 87 per litre and CNG Rs 53 per kg — CNG enjoys a 35% price benefit over petrol.

In fiscal 2023, CNG prices are expected to increase significantly following an over 100% expected rise in domestic gas prices. Despite this, CNG will remain competitive compared with petrol.

CNG adoption is estimated to remain high in new passenger vehicle sales at 7-8% in fiscal 2022, but could stagger a bit in fiscal 2023 owing to rising prices and uncertainty.

CNG competitiveness vis-à-vis petrol to return to fiscal 2020 level next fiscal

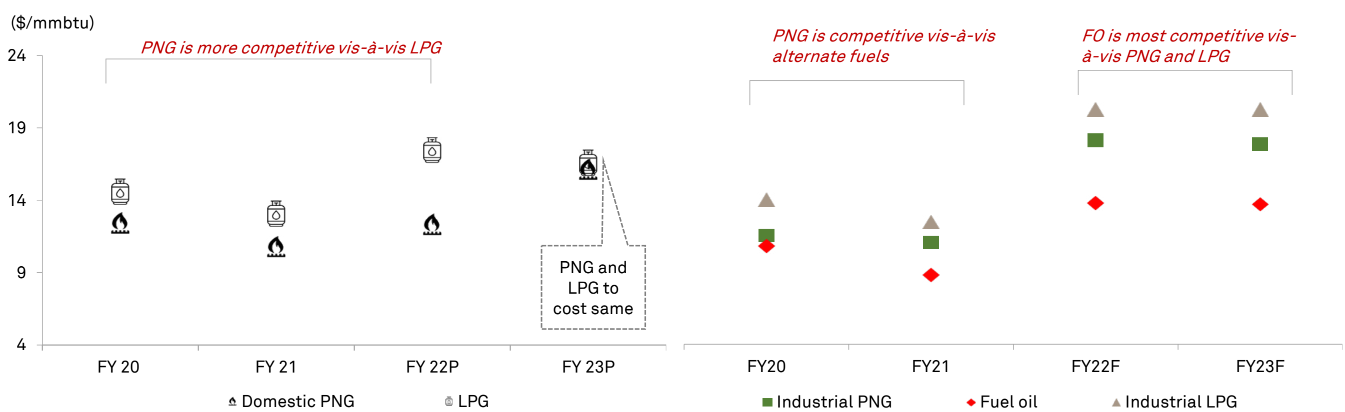


Source: PPAC, IGL, Industry, CRISIL Research

As fuel oil (FO) directly competes with industrial PNG in the industrial fuel segment, cost competitiveness becomes a key area to evaluate fuel switchover process.

Between fiscals 2019 and 2021, industrial PNG has been competitive compared with FO and industrial LPG. However, given the surge in spot gas prices, industrial PNG is expected to cost more. Domestic PNG and LPG are expected to be available at a similar cost compared with a 20-25% differential on average over fiscals 2020-2022.

Rise gas prices to impact PNG cost competitiveness vis-à-vis alternate fuels



Source: PPAC, IGL, Industry, CRISIL Research

Sectoral impact: Fertilisers, industrial PNG, refineries, and petrochemicals to be constrained by higher gas prices this fiscal

Sectors with high dependence on imports have started to reel under the impact of higher gas prices from the third quarter of fiscal 2022 as refinery, petrochemicals, and industrial PNG shift to alternative fuels.

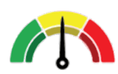
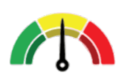
Even year-to-date imports of LNG have seen a slowdown owing to higher gas prices. Imported gas usage in CGD, which increased 50% on-year in the first half of fiscal 2022 on a low base, moderated to 8% in the third quarter of this fiscal compared with 20% on average in fiscals 2016-2020.

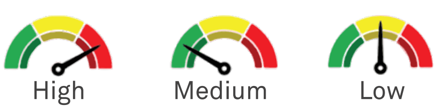
Further, it is estimated that players in the Morbi cluster have taken 5-10% price hike in ceramics to pass on the increase in gas prices, which have nearly doubled over the past year. Despite this price hike, players' profitability is expected to be impacted.

For other end-use segments dependent on domestic gas, no major impact is expected in fiscal 2022. However, industrial PNG's price competitiveness vis-à-vis those of LPG and FO will reduce next fiscal.

A sectoral snapshot for fiscal 2023

	Share in overall demand	Share of imported LNG: domestic gas	Impact on gas demand	Comments on demand	Impact on profitability
Fertilisers	28-30%	61%:39%		• Urea price is fixed by government; the end-users would remain unaffected	• Higher gas prices to increase the government's subsidy bill for the fertilisers sectors by over ~75% in fiscal 2022 • In line with this, fertiliser subsidy for fiscal 2022RE is 76% higher than fiscal 2022BE
Power	19-21%	30%:70%		• Usage of gas in the power sector is already subdued • The gas price increase will led to higher cost of power generated by gas-based power plants. Therefore, it will impact their plant load factors (PLFs). In fact, PLF is estimated to drop to 18-19% in fiscals 2022 and 2023 compared with 23% in fiscal 2021.	• Profitability of gas-based power plants will be affected negatively
CNG	6-8%	0%:100%		• CNG prices are expected to increase further as evident with the recent price hike by IGL and MGL. In fact, as of January 2022, CNG prices in Delhi have already increased to Rs 53 per kg compared with average Rs 43 per kg in fiscal 2021, a 23% rise. • However, given CNG will still be competitive compared with petrol and diesel, therefore, no major impact on demand is expected	• Due to the steep rise in domestic gas prices in fiscal 2023, we expect margins of CGD entities to contract over ~1,000 bps in fiscal 2022 and to contract further in fiscal 2023 by over ~300 bps
Domestic PNG	2-3%	0%:100%		• No major impact on demand is estimated in fiscal 2022. In fiscal 2023, LPG and PNG are expected to cost the same, whereas in fiscal 2022, PNG was ~30% cheaper than LPG.	• Due to steep rise in domestic gas prices in fiscal 2023, we expect margins of CGD entities to contract by over ~1000 bps in fiscal 2022 and contract further in fiscal 2023 by over ~300 bps

	Share in overall demand	Share of imported LNG: domestic gas	Impact on gas demand	Comments on demand	Impact on profitability
Industrial PNG	7-9%	100%:0%		• Industrial PNG consumption started witnessing a slowdown in the third quarter of fiscal 2022 as consumers either shifted to FO or LPG. FO is estimated to increase ~9% in fiscal 2022, whereas non-domestic LPG is estimated to increase 22%	• Due to steep rise in domestic gas prices in fiscal 2023, we expect margins of CGD entities to contract by over ~1,000 bps in fiscal 2022 and to contract further in fiscal 2023 by over ~300 bps
Refinery	13-15%	82%:18%		• With rising gas prices, naphtha will become more cost-competitive vis-à-vis LNG. Therefore, gas usage in hydrogen plants is expected to decline	• As LNG is only used during hydrogenation process in refineries, no major impact is expected on profitability
Petro-chemicals	5-7%	83%:17%		• Price competitiveness between naphtha and gas in dual feed crackers will impact gas demand from the petrochemicals segment	• Due to the steep rise in LNG prices in the second half of fiscal 2022, we expect margins of gas-based petrochemicals units to contract by ~200 bps



Note: Share in overall demand is the average of the last three years
Share of imported LNG: domestic gas is the average of the last three years
Source: CRISIL Research

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