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Unlocking the Potential for a Gas-based Economy in India

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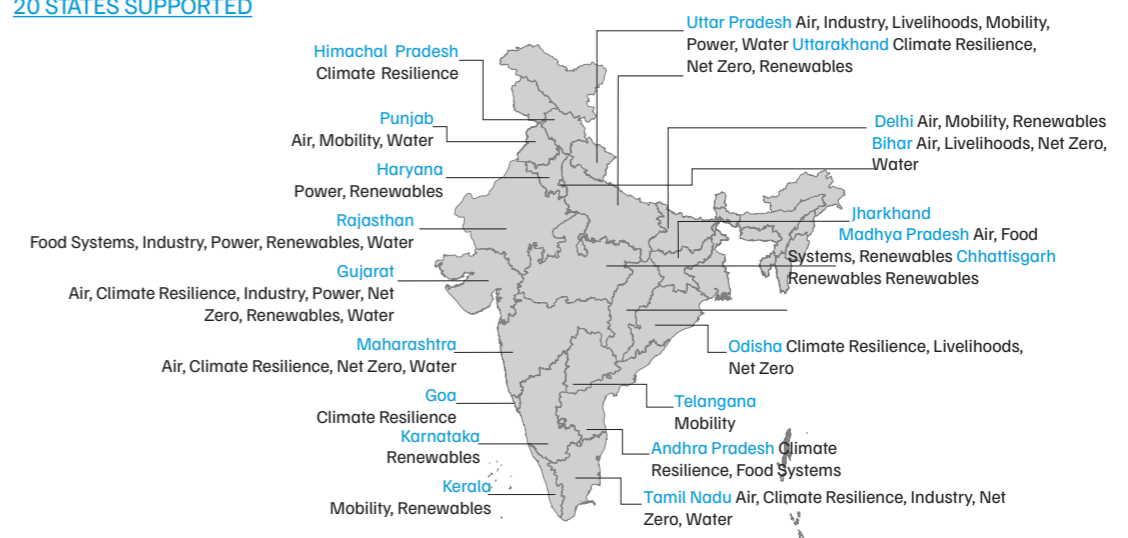
NATIONAL/INTERNATIONAL

- 2011 | National Water Resources Framework
- 2012 | 175 GW renewables target
- 2013 | International Solar Alliance
- 2014 | PM Ujjwala Yojana
- 2015 | Saubhagya Schemes
- 2019 | Climate Vulnerability Index
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- 2021 | Mission LiFE
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- 2024 | PM Surya Ghar Yojana
- 2025 | National Critical Mineral Mission
- 2025 | Rajya Sabha guidelines on crop residue burning
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STATE

- 2022 | Rajasthan Organic Farming Mission
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- 2025 | Rajasthan Green Hydrogen Policy
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Executive summary

As one of the world's fastest-growing major economies, India has witnessed a doubling of its total primary energy demand over the past two decades. This demand has been met predominantly by coal and oil, which together account for over 80 per cent of the country's energy supply (IEA 2025). Although natural gas consumption has also doubled during this period, its share in the total primary energy mix remains relatively low at about 5 per cent as of 2022 (IEA 2025). The Government of India (GoI) initially set a target of increasing the share of natural gas to 15 per cent by 2030, consistent with India's revised Nationally Determined Contributions (NDCs) and its commitment to achieving net-zero emissions by 2070. Achieving this growth, which could result in gas consumption tripling by 2040, will necessitate increasing gas penetration in sectors traditionally reliant on oil and coal, such as road transport, steel manufacturing, and other industries.

However, several barriers hinder the adoption of natural gas. Stagnating domestic production has increased

India's reliance on imports, exposing consumers to volatile global prices, with domestic output at approximately 36 bcm per year against total demand of 68 bcm in 2023–24, generating an import burden of USD 13.4 billion (PPAC 2025). Regulatory ambiguities, particularly regarding marketing and infrastructure exclusivity for city gas distribution (CGD) networks, and the incompatibility between the value-added tax (VAT) and goods and services tax (GST) regimes, create cascading tax burdens that raise end-consumer prices. The recent conflict in West Asia has also exposed India's strategic vulnerabilities, with its current LNG import basket 60 per cent dependent on affected trade routes (Department of Commerce 2025).

Despite these challenges, significant opportunities exist to increase demand. The CGD sector, driven largely by the use of compressed natural gas (CNG) in transport, represents a key growth segment. The steel industry, which aims to double its production capacity, presents a

substantial decarbonisation opportunity through gas-based production that cuts emissions by up to 60 per cent and offers a straightforward pathway towards green hydrogen-based clean steel production (Elango et al. 2023; Nduagu et al. 2022; Yadav et al. 2021). Liquefied natural gas (LNG) can also serve as a medium-term solution for heavy-duty freight, cutting diesel demand while offering lower emissions intensity (Mohan et al. 2025). In the power sector, currently underutilised gas-based power plants can play a crucial role in managing grid intermittency as renewable energy capacity expands under India's Panchamrit targets.

To unlock the full potential of natural gas, this brief recommends a two-pronged approach. **First, rationalise domestic policies and price structures by streamlining taxation, removing regulatory ambiguities, and fostering free-market principles**, such as open access to gas sourcing and transmission infrastructure. **Second, negotiate for favourable import contracts by aggregating demand at the national level and engaging directly with governments and trading partners to ensure better price discovery and reliable, diversified supply.** The key findings and recommendations for this strategy are as follows:

- **Recalibrate the national gas penetration target.** Natural gas accounts for approximately 5 per cent of India's primary energy mix, well below the 15 per cent target for 2030; modelling suggests this gap is unlikely to close (IEA 2025; Das et al. 2025). Achieving this target is challenging under current conditions. Instead, the government can establish complementary sector-specific targets for priority sectors, such as steel and road freight, where gas can play an essential role in the transition.
- **Diversify and hedge import sources.** India's LNG imports are concentrated, with Qatar supplying 40–50 per cent of annual import volumes (Department of Commerce 2026). India should pursue long-term contracts with Canada, Mozambique, Argentina and Australia, the United Arab Emirates (UAE) and the United States of America (USA). Significant additional LNG export capacity is expected to come online in these countries by 2030. Securing new contracts during this phase could improve demand visibility for exporters and lower prices for India.



- **Consolidate demand for natural gas.** The steel sector alone could absorb over 5 bcm per year if priced at USD 8/MBtu (Ministry of Steel 2024), but without aggregated demand signals, India lacks leverage for new import contract negotiations. A central entity, such as the Solar Energy Corporation of India (SECI), can consolidate gas demand potential across sectors (such as steel and transport) and provide clear volume and price visibility for bulk procurement and contract negotiations.
- **Strengthen government-to-government (G2G) cooperation and investments in supply chains.** While India recently signed long-term LNG contracts as corporate agreements, vulnerable to political transitions in partner countries. G2G cooperation can provide greater contractual stability by reducing risks associated with political transitions and by offering financial guarantees. This approach encourages partner countries to invest across the entire natural gas supply chain, thereby enhancing reliability and resilience to global political disruptions, such as the Russia–Ukraine conflict.
- **Include natural gas under GST.** This will eliminate cascading taxes and significantly reduce delivered gas prices for consumers. Natural gas currently contributes a minor share of VAT or sales tax revenues for most states, with exceptions such as Gujarat and Maharashtra, where gas adoption is significantly higher than average. In 2023–24, only INR 15,633 crore out of over INR 250,000 crore of total sales tax/VAT payments by central public sector enterprises to all states were sales payments on crude oil and natural gas (Ministry of Petroleum and Natural Gas 2025). It is critical that states reach a consensus on GST rates for natural gas to improve fiscal efficiency ahead of further growth in gas demand.
- **Reform infrastructure access and tariff mechanisms.** Pipeline capacity booking remains operator-specific and the point-to-point tariff structure restricts cross-regional gas flows and third-party access. An independent system operator should be established to provide more transparent and non-discriminatory access to transmission capacity. Tariff mechanisms should also be gradually transitioned from point-to-point tariffs to an entry–exit tariff system to allow greater flexibility in gas sourcing.
- **Align pipeline access code with gas-based power requirements.** Over 25 GW of gas-based power

capacity recorded only 14.9 per cent utilisation in 2023–24 (CEA 2025), partly due to pipeline rules that restrict flexible capacity bookings. The code should allow 24/7, interruptible capacity bookings, enabling gas power plants to book or release gas capacity on demand and respond more quickly to power demand peaks. This would also improve the economics of gas power plants and enhance their role in managing variability in renewable power generation.

- **Strengthen natural gas market trading through exchanges.** Only approximately 2 per cent of India's gas demand is traded through the Indian Gas Exchange (IGX). Trading natural gas on an exchange, such as the IGX, can enable efficient price discovery, a role that could be strengthened by allowing LNG imported at the terminals to be traded directly on the exchange. Greater participation would also establish the Gas Index of India (GIXI) as a credible national price index, reducing India's reliance on volatile global benchmarks for future contracts. Achieving this will require regulators to amend marketing exclusivity rules for CGD networks and revise LNG terminal access rules to allow independent consumers to procure gas from the spot market and trade it domestically.
- **Develop or adapt methane control protocols to ensure methane emissions are maintained below a minimal threshold.** Methane, a greenhouse gas significantly more potent than carbon dioxide (CO₂), is released through leaks and incomplete flaring in the natural gas supply chain, thereby compromising its environmental advantage over coal. The US EPA estimates that 60 per cent of natural gas supply-chain methane emissions occur during production alone, with further losses in transmission and distribution (US EPA n.d.). A suitable government agency, such as the Ministry of Petroleum and Natural Gas (MoPNG), the Petroleum and Natural Gas Regulatory Board (PNGRB), or the Central Pollution Control Board (CPCB), should lead this initiative.

Unlocking natural gas potential requires domestic policy reform, price rationalisation, demand aggregation, and diversified import contracts.

- **Support pilot projects for turquoise hydrogen production.** Turquoise hydrogen from methane pyrolysis reduces lifecycle CO₂ by approximately 84 per cent versus grey hydrogen, with carbon by-products offering additional revenue (Prabhu et al. 2023). Pilot plants can be deployed to assess the viability of this technology in supporting India's clean hydrogen ambitions.
- **Leverage natural gas to access new markets or increase share** by making gas-based product exports more competitive over exports from other countries to regions like the EU due to the Carbon Border Adjustment Mechanism (CBAM). Gas-based steel, for example, has 30–60 per cent lower CO₂ emissions than coal-based steel (Elango et al. 2023; Nduagu et al. 2022; Yadav et al. 2021). It would therefore not be subject to taxes under CBAM, making it potentially more competitive despite higher production costs.



Countries like Canada, Mozambique, Argentina, Australia, UAE, and USA are adding substantial new gas liquefaction and export capacities by 2030, making this the right time for India to diversify its import sources.

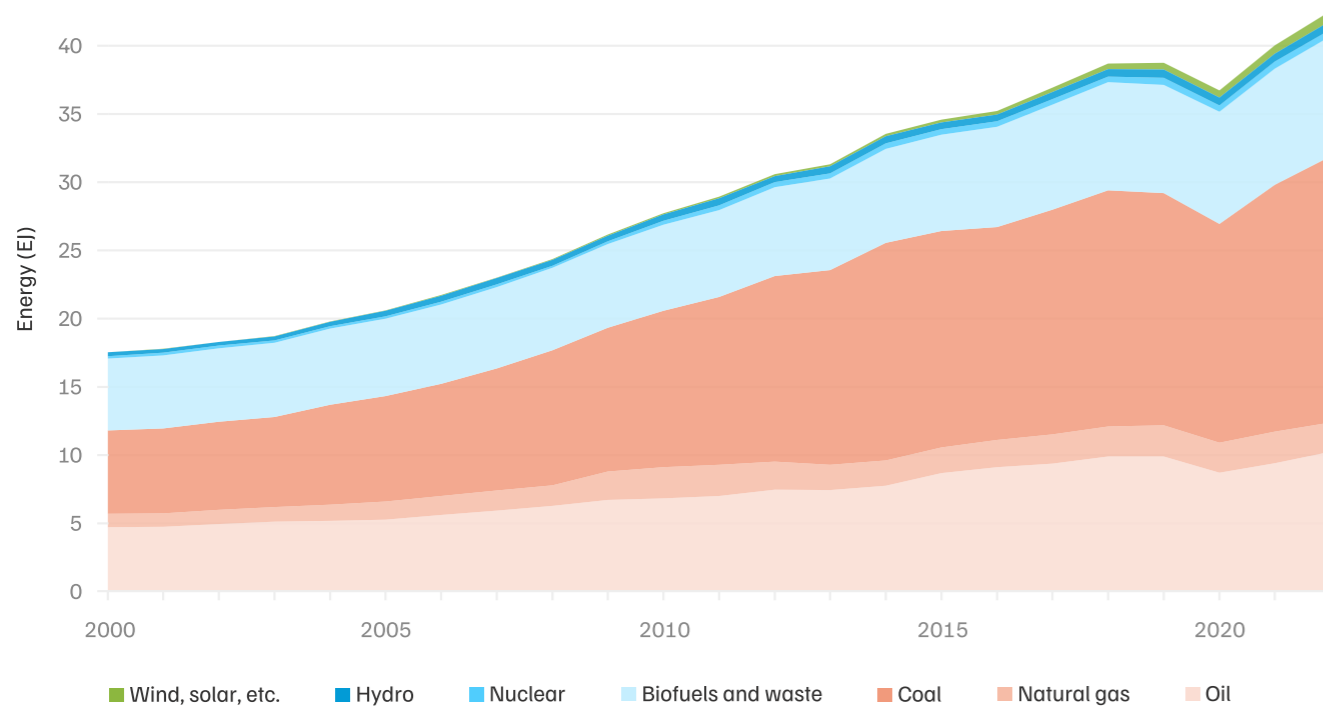
1. Introduction: India's energy landscape and the role of natural gas

India is among the fastest-growing major economies globally. Driven by rising population, income, and consumption, the country's total primary energy demand has doubled over the past two decades (Figure 1). This demand has been met largely by coal and oil, which together account for more than 80 per cent of the primary energy supply (IEA n.d.). Coal-based energy has recorded the most significant growth during this period.

energy supply mix to 15 per cent by 2030 (PIB 2023c). However, while natural gas consumption has doubled over the last two decades, its share in the total primary energy mix remains relatively low, at about 5 per cent as of 2022 (IEA n.d.). In contrast, renewable energy from solar and wind has grown significantly faster, increasing nearly 100-fold over the same period. As shown in Figure 2, gas consumption in India grew steadily during 2000–10, but declined and subsequently stagnated during 2010–22.

In 2016, the Government of India (GoI) set a target to increase the penetration of natural gas in the primary

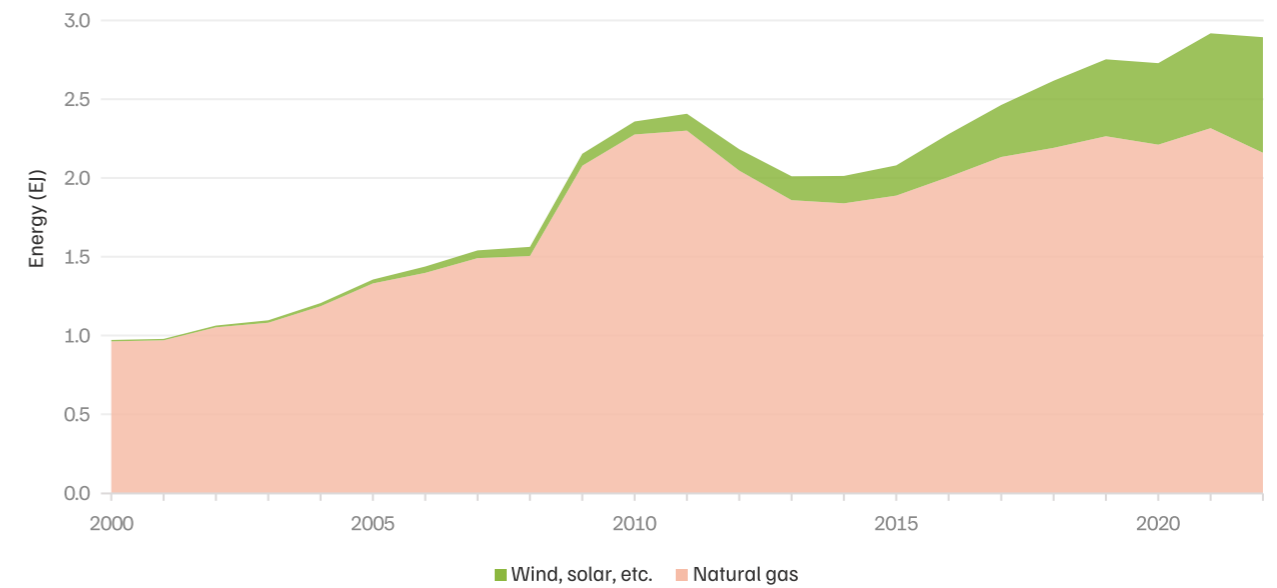
Figure 1. Primary energy supplied by coal and oil has met much of India's energy demand growth



Source: IEA (International Energy Agency). n.d. "Energy Mix." International Energy Agency.

Note: Units are in exajoules (EJ).

Figure 2. Total energy supplied by renewables grew substantially while natural gas stagnated

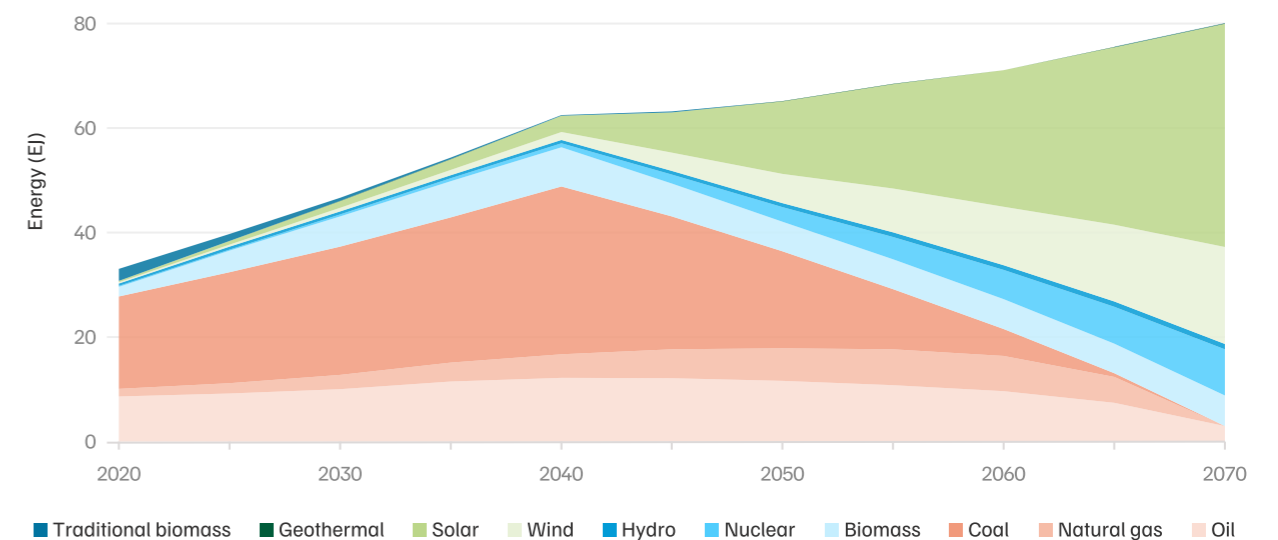


Source: IEA (International Energy Agency). n.d. "Energy Mix." International Energy Agency.

Figure 3 depicts primary energy demand projections by source until 2070 based on a CEEW analysis of the pathways to achieve net-zero emissions (Das et al. 2025). Under the depicted net-zero scenario, we do not expect the share of natural gas to reach 15 per cent. Instead, it peaks at 10 per cent by 2055, then declines to

0 per cent by 2070. This growth entails a tripling of gas consumption from 2.0 exajoules (EJ) (53 bcm) to 6.8 EJ (180 bcm) over 2025–40, thereby signifying substantial growth potential in the medium term while still aligning with the net-zero trajectory overall.

Figure 3. Projected natural gas demand could triple by 2040 in a net-zero 2070 scenario



Source: Das, Pallavi, Vaibhav Chaturvedi, Joy Rajbanshi, Zaid Ahsan Khan, Satish Kumar, and Akash Goenka. 2025. "A New Scenario Set for Informing Pathways to India's Next Nationally Determined Contribution and 2070 Net-Zero Target: Structural Reforms, LIFE, and Sectoral Pathways." Energy and Climate Change 100192.

Note: The sharp decrease from 2040 is a result of modelling assumptions and functional parameters in the Global Change Analysis Model (GCAM) used in the cited study.

Achieving this growth will require increasing gas penetration in sectors that traditionally consume oil and coal, such as road transport, steel manufacturing, and other industry sectors. At the same time, the country must strategise and counterbalance this growth with practical energy transition plans aligned with the national net-zero emissions target, which would necessitate a decline in

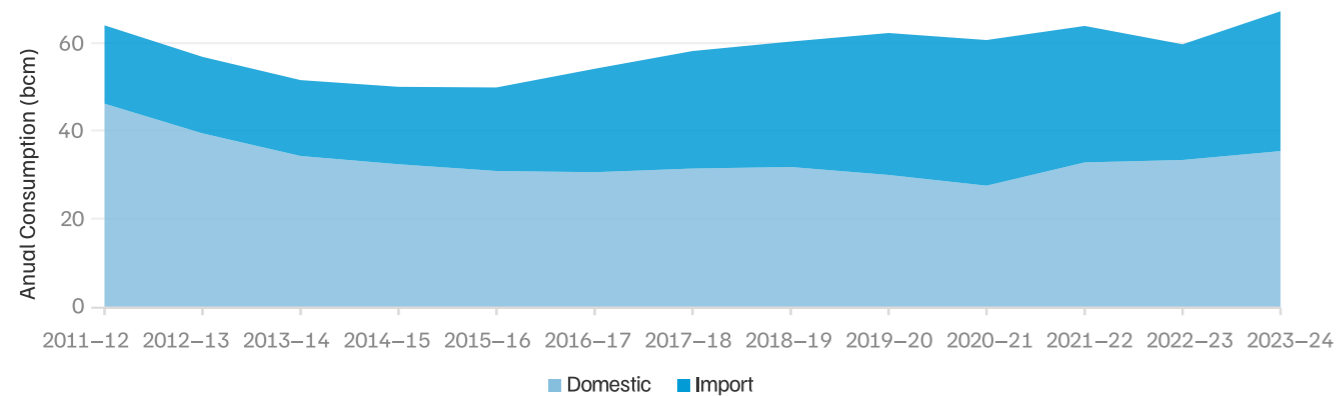
gas consumption after 2060. By examining the varying growth prospects across key demand sectors, this policy brief outlines the urgent policy and regulatory shifts required to deploy natural gas strategically. This includes supporting gas use where it is essential for lowering emissions while avoiding dependence on it as cleaner alternatives emerge.

2. The state of natural gas supply in India: Challenges of import dependence

In the financial year (FY) 2023–24, India consumed a record 68 bcm¹ of gas, of which 53 per cent was produced domestically and 47 per cent imported as liquefied natural gas (LNG) (PPAC 2025). India accounted for 7 per cent of the global LNG market

in 2024 (GIIGNL 2025). Over the past decade, approximately half of India's gas supply has been sourced through imports due to stagnating domestic production, resulting in an import burden of USD 13.4 billion in 2023–24 (PPAC 2025).

Figure 4. The share of imported natural gas has increased due to declining and stagnating domestic production



Source: Petroleum Planning and Analysis Cell. 2025. *India's Oil and Gas Ready Reckoner*. Ministry of Petroleum and Natural Gas, Government of India.

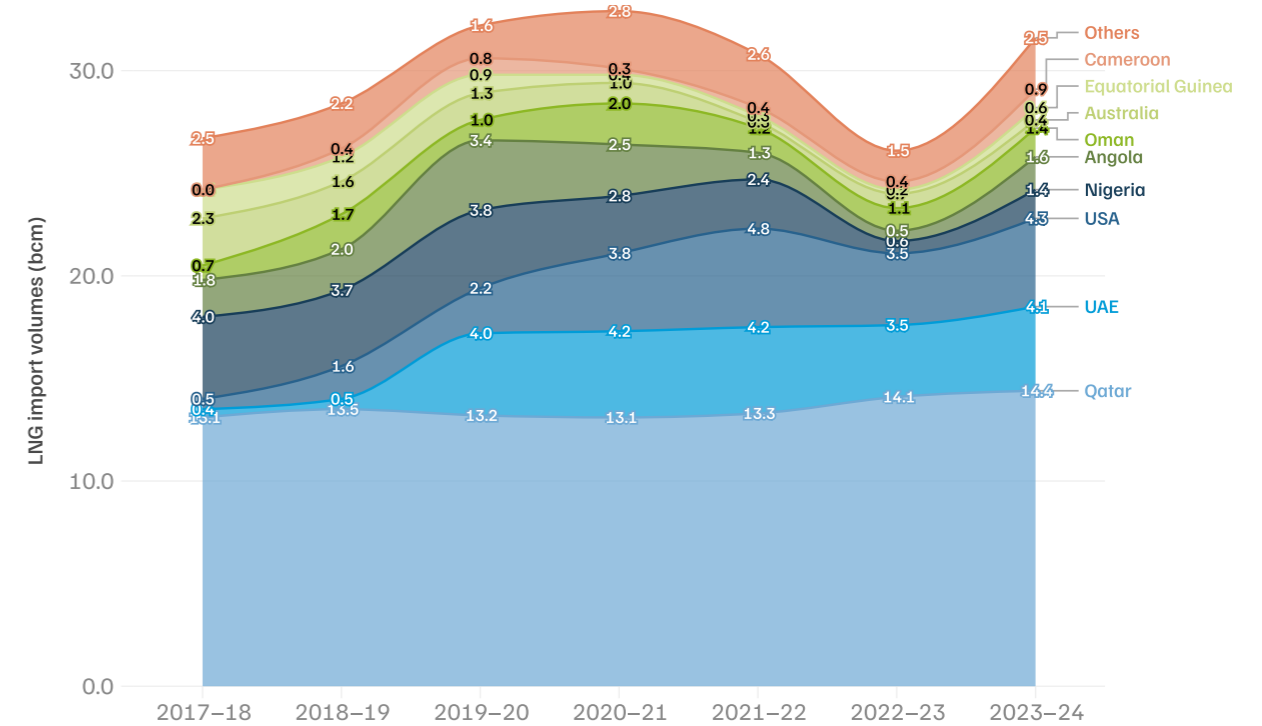
1. 1 bcm ≈ 37.7 petajoules.

Figure 4 shows the division between domestically produced gas and regasified LNG (RLNG) imported in 2011–24 in total gas demand. The figure highlights a notable decline in domestic gas production during 2011–13, after which production failed to recover. This decline and stagnation are attributed to difficulties in extracting gas from major offshore reserves identified in the Krishna–Godavari (KG) basin on India's east coast, along with declining volumes from other major offshore wells off the coast of Maharashtra in the west (Singh et al. 2022).

The inertia of domestic production has amplified the importance of gas imports. The five-year average share of imports rose from 33 per cent in 2011–16 to 49 per cent in 2019–24 (Figure 4). India primarily relies on long-term contracts for gas imports through its seven operational LNG terminals, with four additional terminals under construction. In 2024, 63 per cent of India's imports were received through long-term contracts with countries such as Qatar, the United Arab Emirates (UAE),

the United States (US), and Australia (GIIGNL 2025; The Economic Times 2024). India also receives short-term and spot volumes from these countries and from others, such as Angola and Cameroon (GIIGNL 2025). Qatar remains India's largest gas exporter, constituting 40–50 per cent of imports (Figure 5). The UAE and the US have emerged as significant import partners over the past five years, each constituting 13–14 per cent of imports in 2023–24. India accounted for 50 per cent of the UAE's LNG exports in 2024, contributing significantly to the development of their LNG market (GIIGNL 2025). The conflict in West Asia in early 2026, resulting in the effective closure of the Strait of Hormuz, has affected nearly 60 per cent of India's LNG imports (Department of Commerce 2025), resulting in curtailment of gas supplies to industries and commercial establishments (Pande, Sahu and Dutta 2026). The conflict has highlighted vulnerabilities in concentrated imports and has called attention to the strategic need to diversify imports imminently.

Figure 5. Qatar alone accounts for 40–50% of India's liquefied natural gas imports



Source: Department of Commerce. 2025. "Export Import Data Bank." Ministry of Commerce and Industry, Government of India.

The landed price of LNG from the US (i.e. the price at the import terminal before taxes and duties) has typically been lower and more stable than that from other countries (Figure 6). Over the past eight years (April 2017–December 2024), US LNG has been 6.6 per cent cheaper on average than Qatar LNG, with the gap widening to 15.4 per cent over the last four years (April

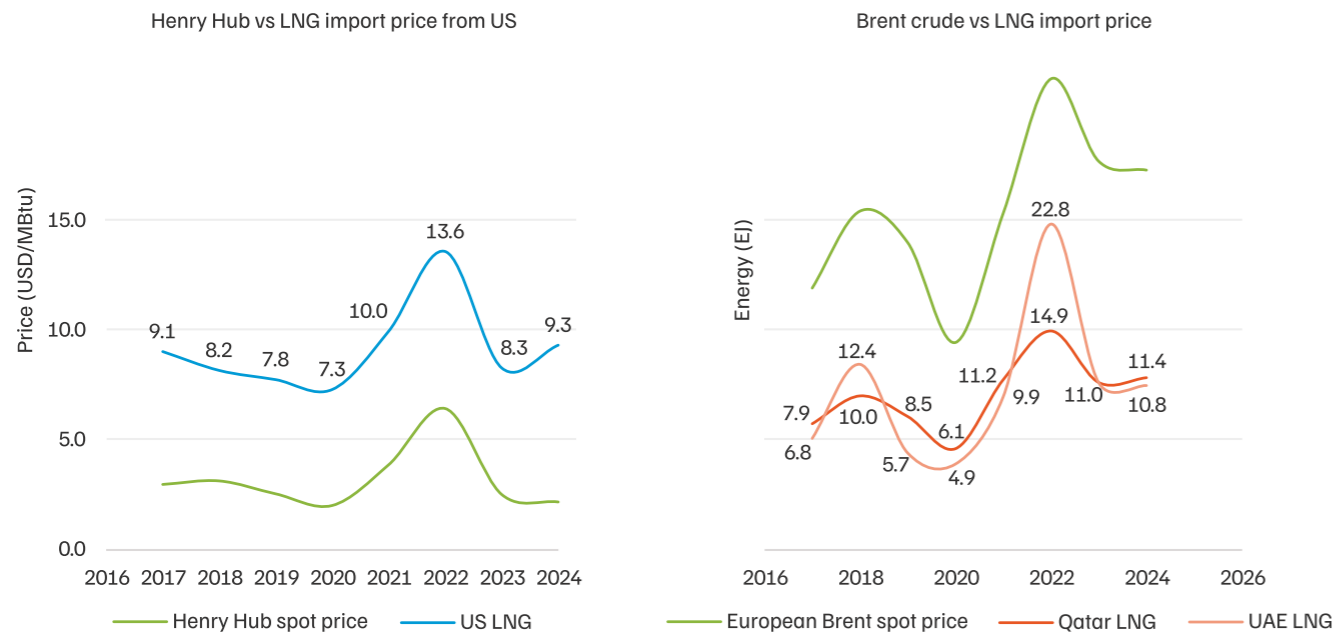
2021–December 2024). In 2023–24, US LNG was the cheapest at USD 8.3 per million British thermal units (MBtu), compared with a quantity-weighted average price of USD 11.1/MBtu for all other countries, making it 25 per cent cheaper. In the longer term, a diversified portfolio of suppliers, contract terms and indices will provide the requisite stability and security.

Since December 2024, Indian importers have signed four long-term contracts totalling 11 million tonnes per annum (Mtpa) linked to Henry Hub prices, typically structured at 115–120 per cent of the Henry Hub price plus USD 5–6/MBtu). Analysts note that importers prefer the lower volatility displayed by the Henry Hub index in recent years compared with other gas or oil indices (Sharma and Stapczynski 2025; Pande 2025). These contracts complement existing oil-linked contracts and will provide stability against index-specific volatilities.

Both the US and the UAE are planning substantial expansions in natural gas liquefaction capacity, with the US announcing or adding over 100 Mtpa (doubling its capacity as of 2024) and the UAE adding nearly

10 Mtpa (tripling its capacity as of 2024) by 2030 (GIIGNL 2025). Canada, Mozambique, Argentina and Australia are also adding considerable new capacities in the coming years (IEA 2026). These large capacity expansions strongly signal potential overcapacity in the coming years, presenting an opportunity for India to negotiate additional contracts at competitive prices and diversify away from Qatar. India already has a free trade agreement with the UAE (Department of Commerce 2024), has formally announced an interim agreement with the US aimed at increasing energy procurement (The White House 2026) and is in talks with Canada for a Comprehensive Economic Partnership Agreement that is expected to be concluded in 2026 (Chatterjee 2026).

Figure 6. US LNG, likely indexed to Henry Hub, is typically cheaper than others (2017–18 to 2024–25, up to December 2024)



Source: Authors' illustration from US EIA (United States Energy Information Administration). n.d. "Henry Hub Natural Gas Spot Price." Last updated March 4, 2026. <https://www.eia.gov/dnav/ng/hist/rngwhhdm.htm>; Department of Commerce. 2025. "Export Import Data Bank." Ministry of Commerce and Industry, Government of India.

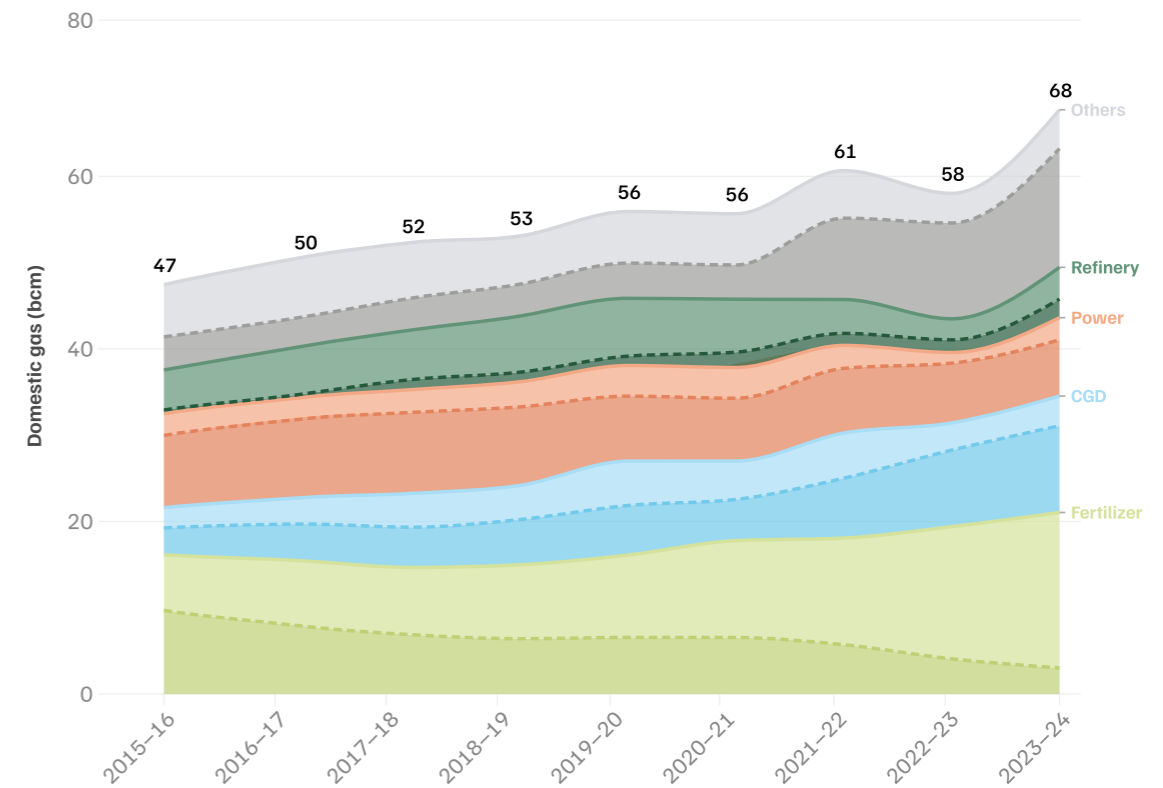
Note: Natural gas import contracts can be broadly categorised into medium- to long-term, short-term, and spot contracts. Medium- and long-term contracts typically last 5–25 years, while short-term contracts last less than 5 years. Liquefied natural gas may also be procured on the spot market, which operates on a daily basis for immediate delivery (within 30 days). In this paper, references to long-term contracts denote agreements with a 20-year term, while long-term demand or supply refer to periods extending to 2070.

3. Untapped demand potential: Key sectors for natural gas adoption

Natural gas consumption in India is currently dominated by the fertiliser (30.6 per cent in 2023–24), city gas distribution (CGD) (19.6 per cent), power (13.2 per cent), and refinery (8.5 per cent) sectors, with other industries accounting for nearly 30 per cent. Significant potential for demand growth also exists in transport (LNG) and steel.

gas and RLNG. The effects of the priority allocation policy for domestic gas (discussed in the Annexure) are observed in the increasing domestic gas consumption by the CGD sector, while the allocation to the fertiliser sector has declined. As a result, the fertiliser sector has become, by far, the largest consumer of RLNG.

Figure 7. The fertiliser industry and city gas distribution consume over half of India's total gas demand



Source: Petroleum Planning and Analysis Cell. 2025. India's Oil and Gas Ready Reckoner. Ministry of Petroleum and Natural Gas, Government of India.

Note: 1. The darker shade of each category denotes domestic gas volumes, and the lighter shade indicates imports. 2. 'Others' in this chart includes sponge iron/steel, petrochemical, agriculture (teaplantations), manufacturing, industrial. Liquefied petroleum gas (LPG) shrinkage, internal use, and other/miscellaneous uses as reported by PPAC.

3.1. Fertiliser and refinery: Past growth drivers with future shifts

India is the third-largest fertiliser producer globally and the second-largest consumer (PIB 2025a). All urea manufacturing plants rely entirely on natural gas as a feedstock, making the fertiliser sector historically the largest consumer of natural gas and, increasingly, the largest consumer of imported RLNG (Figure 7). Urea is a key agricultural fertiliser and remains a subsidised commodity, with subsidies alone amounting to over USD 20 billion annually (PIB 2025a). In recent years, several new and revived plants have commenced production, while additional plants remain under construction. Over the past six years, six new urea plants with a combined capacity of 7.6 Mtpa have been commissioned (Rajya Sabha 2025; PIB 2024, 2025). Therefore, stable and affordable RLNG supplies are critical for maintaining fertiliser production while managing the subsidy burden.

India currently has a crude oil refining capacity of nearly 250 Mtpa, making it the fourth-largest refiner globally (MoPNG 2025). Refineries accounted for 8.5 per cent of national gas demand in 2023–24, and total refining capacity is projected to expand by 20 per cent by 2028 (S&P Global 2025). However, over half of refinery products by volume are consumed by the transport sector (MoPNG 2025). The increasing adoption of electric and natural gas vehicles could therefore substantially reduce demand for refined petroleum products over the medium to long term (Mohan et al. 2025).

The *National Green Hydrogen Mission* (NGHM) aims to transition fertiliser plants and refineries to green

hydrogen by 2030 (MNRE n.d.). This shift could offset a significant share of natural gas demand in these sectors and free up volumes for other sectors. As of 2025, 7,24,000 tonnes per annum (tpa) of green ammonia manufacturing capacity across 13 fertiliser plants, and 20,000 tpa of green hydrogen across 3 refineries, have been authorised for development under NGHM subsidies (PIB 2025b). While producing green hydrogen (USD 3.5–5/kg) remains more expensive than producing grey hydrogen (USD 2.3–2.5/kg) (Bharat Climate Forum 2026), green ammonia tenders have discovered significantly lower apparent prices of USD 2.3/kg for green hydrogen. However, this lower price was achieved through a combination of central (NGHM) and state-level subsidies (Pal et al. 2025), as well as the use of electrolyzers typically imported from China at affordable prices.

Until green hydrogen demand scales sufficiently to enable cost-effective indigenisation of the value chain (Bharat Climate Forum 2026), these anchor sectors are likely to continue consuming natural gas for a large share of their requirements. A CEEW study assessing the economic feasibility of blending green ammonia in fertiliser production found that, in urea production (where ammonia is produced domestically), blending 10 per cent green ammonia would increase the average cost of ammonia by 17 per cent. For non-urea fertiliser production (where ammonia is largely imported), the average cost of ammonia would rise by 8 per cent (Kothadiya et al. 2024).



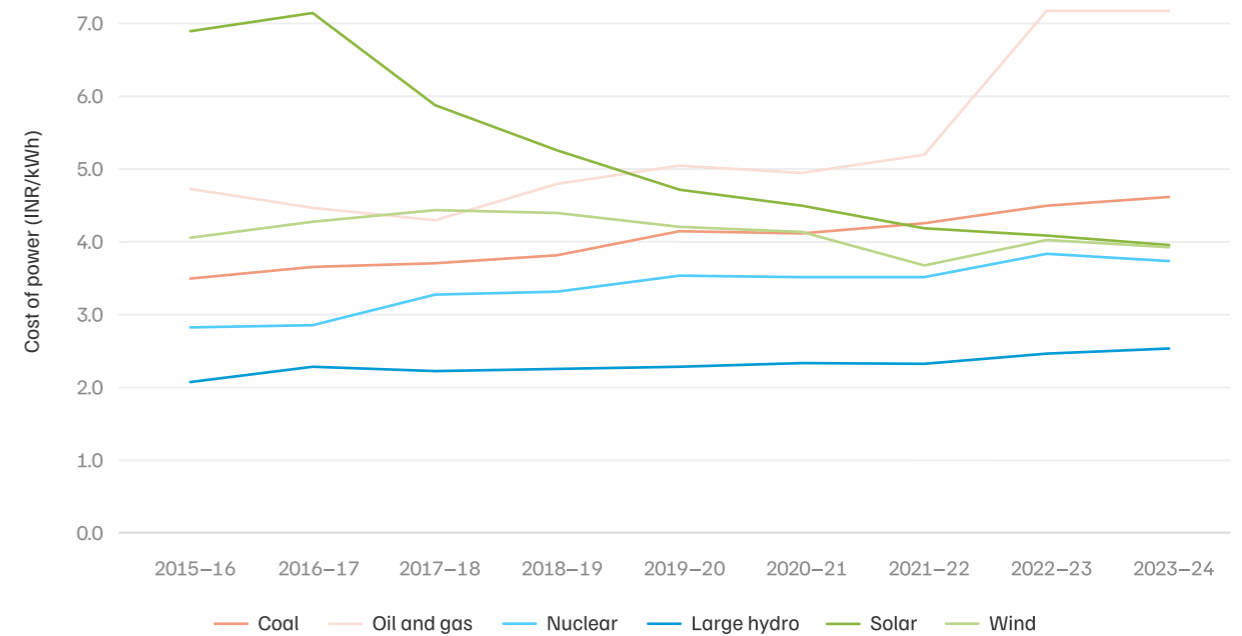
Over 30% of natural gas demand is for fertiliser production.

3.2. Power: Limited growth with peak load management potential

Despite having over 25 GW of gas-based power capacity (6 per cent of national generation), total gas-based power generation in 2023–24 accounted for only 1.8 per cent of the national total (MoP 2025; CEA 2025). These plants operate at a very low capacity utilisation factor (14.9 per cent in 2023–24) because gas is more expensive than coal or renewable power. In 2023–24,

despite ~60 per cent of the consumption being price-controlled domestic gas (at USD 6.5–8.5/MBtu), the cost of gas-based power was INR 7.2/kWh, compared with INR 4.6/kWh for coal and less than INR 4/kWh for solar and wind (Figures A2 and 8) (NITI Aayog and Vasudha Foundation n.d.).

Figure 8: Gas-based power is uneconomical compared to renewables



Source: NITI Aayog and Vasudha Foundation. n.d. "Power Purchase." India Climate and Energy Dashboard. Last updated March 5, 2026.

However, gas-based power plants are well suited for peak-load and intermittency management, as they can ramp generation up and down much faster than coal-based thermal power plants. In 2024, gas-based power plants were deployed to manage record-high electricity demand during extended summer heatwaves in May and June (Kemp 2024; Sharma 2024). This characteristic may also allow them to play a role in managing the

intermittency associated with India's growing renewable power capacity. At the same time, grid-scale battery storage systems are becoming cheaper, with recent tenders for firm and dispatchable renewable energy (FDRE) attracting bids in the range of INR 5/kWh (Freese 2025). Cheap and reliable gas supplies can provide peak-shaving support to the grid in the short term while grid-scale battery storage is fully integrated at a large scale.

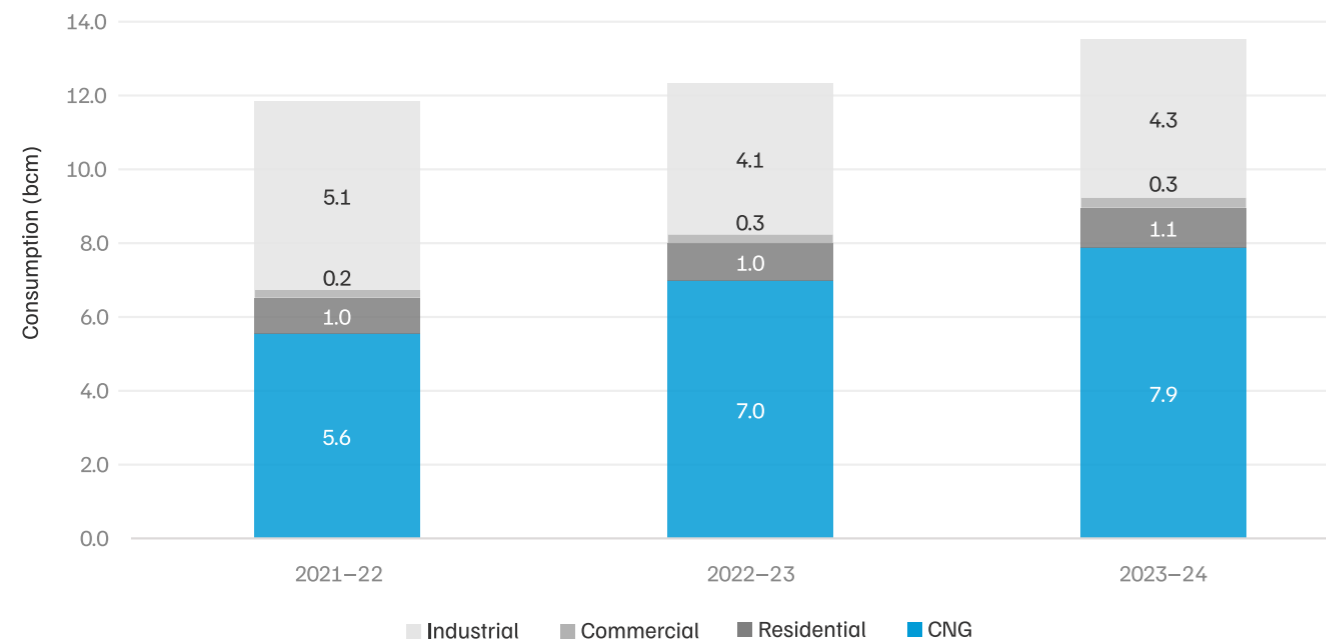
2. Firm and dispatchable renewable energy (FDRE) projects ensure constant (firm) supply while also allowing for the supply to be turned on, off, or adjusted as needed to match the demand profile (dispatchable), effectively delivering round-the-clock (RTC) power from renewable sources to consumers. petrochemical, agriculture (tea plantations), manufacturing, industrial, liquified.

3.3. City gas distribution: Push from gas in transport

City gas distribution represents the second-largest distinct consumer category for natural gas, accounting for nearly 20 per cent of demand, or over 5.6 bcm in 2023–24. With the CGD network rapidly expanding across the country, demand has grown at a compound annual growth rate of 8.7 per cent over the last decade (PNGRB 2023; PPAC n.d), more than doubling in annual sales volume in just the last four years. In 2023, India had 4.5 million compressed natural gas (CNG) vehicles on the road, accounting for 9 per cent of all non-two-wheeler vehicles (Mohan et al. 2025). The bulk of this growth,

nearly 60 per cent, has been driven by the use of CNG in vehicles — especially three-wheelers, taxis, buses, and trucks — due to its cost-effectiveness compared to petrol and diesel (Figure 9). However, electric vehicles (EVs) are, on average, much cheaper than competing powertrain options in three-wheelers, with EVs in other segments slated to become more competitive by 2030 (Elango et al. 2025). Therefore, while the expansion of CGD networks will add to the CNG consumer base, competition from EVs will abate CNG growth.

Figure 9. Compressed natural gas constitutes over 60% of the demand basket of city gas distribution



Source: Petroleum Planning and Analysis Cell. 2025. *India's Oil and Gas Ready Reckoner*. Ministry of Petroleum and Natural Gas, Government of India.

As of 2023–24, the CGD sector sources 25 per cent of its demand through LNG (PPAC 2025). Residential gas and CNG are entitled to 100 per cent allocation of price-controlled domestic gas (Annexure A1). However,

declining volumes of price-controlled volumes could mean greater exposure to market prices and RLNG for the CGD sector, especially given the expected pace of network growth in new areas.

3.4 Liquefied natural gas in transport: A medium-term solution for decarbonising heavy-duty freight

Heavy-duty freight transport accounts for over 40 per cent of CO₂ emissions from India's road transport sector, a share projected to exceed 50 per cent by 2045 (Mohan et al. 2025). In the medium term, LNG could serve as a viable fuel for long-distance heavy-duty transport. Trucks utilising LNG are more efficient and offer a longer driving range than diesel trucks, and LNG could be cheaper than diesel, resulting in a lower total cost of ownership (Elango et al. 2025). Electric trucks currently face challenges related to higher costs, limited range, and insufficient charging infrastructure, while hydrogen trucks are still under development and are unlikely to reach scaled deployment in heavy-duty applications before 2040. An analysis by CEEW suggests that, without alternative fuel options in the medium term, diesel demand will continue growing until 2047, while petrol demand is expected to peak much earlier, by 2032. This could make it challenging for refineries to manage their product mix (Mohan et al. 2025). The analysis further indicates that a

combined adoption of EVs and LNG vehicles represents the best scenario for reducing transport emissions while moderating growth in diesel demand (Mohan et al. 2025).

Regulatory support has also been extended to LNG, with the Petroleum and Natural Gas Regulatory Board (PNGRB) notifying amended regulations for the sale of LNG through refuelling stations and clarifying that any entity can establish LNG refuelling stations, thereby promoting wider adoption (PNGRB 2018, 2020). The PNGRB has also recommended reductions in truck-loading charges and state VAT for LNG in trucking, and to reduce the GST on LNG trucks (PNGRB 2024a; ICF 2025). In parallel, commercial trials and operational fleets of LNG-powered trucks are demonstrating the viability of LNG (Delhivery 2024; Motorindia 2022; GreenLine 2025).

3.5 Steel: Doubling capacity with cleaner fuels

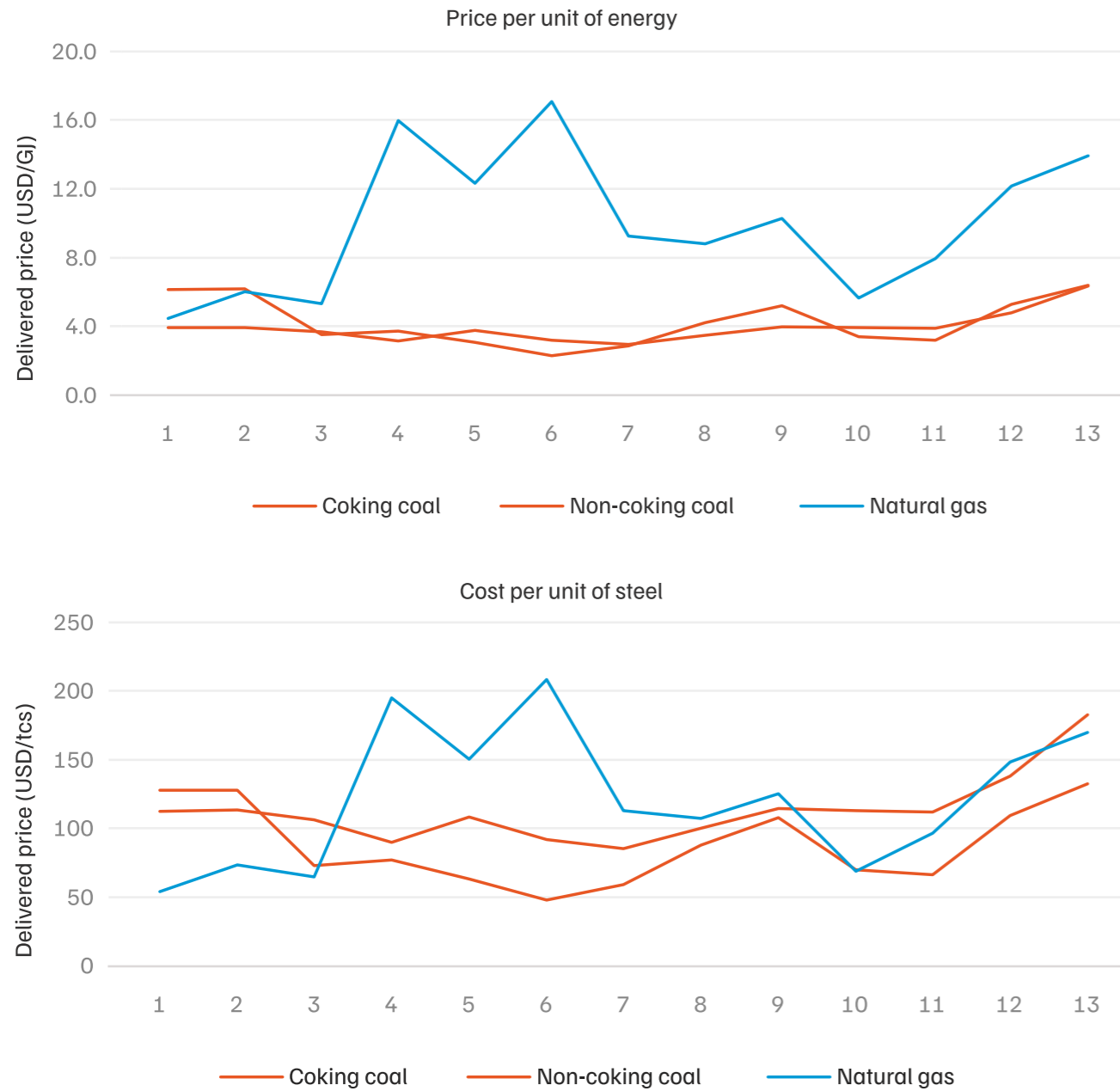
India's steel industry is the second largest in the world, yet its emission intensity remains significantly higher than the global average. Steel production in India emits 2.36 tonnes of CO₂ per tonne of crude steel (tCO₂/tcs) compared with a global average of 1.91 tCO₂/tcs, largely due to the sector's reliance on coal, which accounts for approximately 90 per cent of its production (Elango et al. 2023; World Steel Association 2024). Gas-based steel production currently accounts for less than 10 per cent of India's steelmaking capacity. However, it entails over 30 per cent lower CO₂ emissions per unit of crude steel than coking coal-based routes (and 60 per cent lower when using renewable electricity) and can seamlessly transition to green hydrogen without substantial infrastructural modifications and investments, making it future-proof (Elango et al. 2023; Nduagu et al. 2022; Yadav et al. 2021).

India's steel industry is also highly dependent on imported coking coal, importing ~80 per cent of coking coal used in blast furnaces and ~50 per cent of non-coking coal used in rotary kilns (Elango et al. 2023). Policy shifts in key exporting countries, such as Australia,

could therefore pose risks to the industry's stability. While natural gas is more expensive on an energy basis, the higher efficiency of gas-based steelmaking processes can offset part of this cost difference (Figure 10).

The Ministry of Steel recently released a roadmap for green steel production in India (Ministry of Steel 2024) and introduced a green steel taxonomy based on emissions intensity (The Gazette of India 2024). In addition, the Bureau of Energy Efficiency (BEE) is developing the Carbon Credit Trading Scheme (BEE n.d.) aimed at establishing a domestic market for CO₂ emissions trading. Given all these market and policy signals, and the potential doubling of India's steelmaking capacity to 300 Mtpa (PIB 2023b), investment in gas-based steelmaking may be more prudent. If the market and policies (such as green public procurement) signal sufficient demand, large-volume, long-term gas import contracts could be negotiated at competitive prices. Even 24 Mtpa of projected gas-based steel manufacturing could generate additional gas demand of ~7.3 bcm per year (Ministry of Steel 2017).

Figure 10. Natural gas could be price-competitive with coking coal for steel production at prevailing commodity prices



Source: Authors' analysis

Note: 1. 1 MBtu = 1.055 GJ.
 2. Calorific values assumed: 28 GJ/tonne coking coal; 20 GJ/tonne non-coking coal; 55 GJ/tonne natural gas (Elango et al 2023).
 3. Specific energy consumption assumed: 21 GJ/tcs for coking coal; 29 GJ/tcs for non-coking coal; 12 GJ/tcs for natural gas (Elango et al. 2023; Nduagu et al. 2022).

3.6 Small and medium enterprises: Transition from more polluting fuels

Favourable economics have led many small- and medium-sized industries, such as glass, ceramics, and plastics, to transition from petroleum-derived liquid and gaseous fuels, including furnace oil, naphtha, and LPG, to natural gas. In addition, the expanding availability of piped natural gas across more regions of the country has enabled a seamless and simplified supply chain for these industries. As transmission and distribution pipeline networks continue to expand, more such industries are likely to switch to gas.

Air pollution concerns have also driven gas consumption in regions such as the National Capital Region (NCR) of Delhi, the Taj Trapezium Zone in Uttar Pradesh, and Morbi in Gujarat. Industries consuming polluting fuels have been mandated by authorities to switch to piped natural gas to reduce carbon monoxide (CO), nitrogen oxides (NOx), sulphur oxides (SOx), and particulate matter emissions (PIB 2023a; Pathak 2019; Thomas 2022). Similar regulatory interventions could also emerge in other regions of the country as air pollution worsens and related public health concerns intensify.



Pipeline network expansion will enable natural gas access for smaller industries that currently consuming the more polluting petroleum-derived fuels.

Image: iStock

4. Challenges to expanding natural gas adoption

The preceding sections discussed India's supply scenario and the status and outlook of sectoral demand. Some key challenges to expanding natural gas adoption are summarised as follows:

- Lack of demand visibility:** Apart from the CGD sector, where gas demand growth is driven by expanding city gas pipeline networks and rising CNG demand in transport, there are no clear demand signals from crucial industrial sectors, such as steel, for additional demand. Legacy sectors, such as fertiliser manufacturing and oil refining, have largely plateaued in terms of existing demand and are already on a path to decarbonisation through the adoption of green hydrogen. Energy modelling scenarios aligned with India's 2070 net-zero target suggest that gas demand is unlikely to reach the targeted 15 per cent share by 2030, with further growth also expected to remain limited.
- Greenhouse gas emissions from natural gas:** Although transitioning to natural gas in certain sectors (as discussed in Section 3) can reduce emissions, natural gas remains a fossil fuel and generates substantial greenhouse gas emissions. In particular, methane emissions present a significant concern for natural gas across its lifecycle; according to the United States Environmental Protection Agency, 60 per cent of emissions occur during production, 6 per cent during processing, 19 per cent during transmission and storage, and 6 per cent during distribution (US EPA n.d.). Methane is the primary chemical constituent of natural gas and has a 100-year global warming potential (GWP) of nearly 30 times that of CO₂ and a 20-year GWP of 83. This means that the warming effect of methane in the atmosphere over 20 years is 84 times that of CO₂ (Forster et al. 2021). Fugitive methane emissions and incomplete flaring in natural gas supply chains therefore pose a significant risk associated with increased gas consumption (World Bank Group n.d.).
- Import dependency:** India's domestic gas production has largely stagnated, with increasing outputs from high-pressure/high-temperature wells in the KG basin since 2021 offsetting declining production from several mature ONGC fields (MoPNG 2025). At the same time, demand growth expectations, particularly from CGD operators, point to a need for increasing gas imports, which further exposes India's consumers to global price fluctuations. In addition, global geopolitical shifts and evolving policies regarding funding for fossil fuel projects threaten the stability of transnational supplies (IEA 2020; The National Archives 2021; Banking on Climate Chaos 2024). The recent conflict in West Asia has highlighted the vulnerability of having a concentrated supply chain, with nearly 60 per cent of India's LNG imports affected by trade route closures (Department of Commerce 2025).
- Limited infrastructure access to pipeline capacity and LNG terminals:** Although India has significantly expanded its gas pipeline network in recent years, access to infrastructure remains rigid and fragmented. Pipeline capacity booking remains operator-specific, with limited flexibility for short-term or round-the-clock (24x7) bookings. The continued use of point-to-point tariffs, rather than an entry–exit system, further discourages gas movement across regions and limits market integration. In addition, LNG terminal utilisation remains suboptimal, as a large share of the capacity is tied up under long-term contracts or withheld by operators. This limits open access for third-party users.
- Lack of competitive market access:** Regulations issued by the PNGRB incentivise infrastructure development by granting marketing and infrastructure exclusivity to CGD operators (PNGRB 2008), which can lead to a lack of competition and fair pricing. Ambiguity in the provisions governing the

3. Point-to-point tariff: A pricing mechanism in which the transport fee is tied to a specific physical path between a designated injection point (seller) and a delivery point (buyer). If the buyer switches to a different supplier (thereby changing the injection point), a new transport contract is typically required.

4. Entry–exit tariff: A flexible pricing model in which users book capacity to enter (inject) and exit (withdraw) the pipeline network independently, treating the entire grid as a single virtual zone or hub. This allows buyers to purchase gas flexibly from any supplier that has injected into the system, regardless of physical location.



Global geopolitical shifts have highlighted the risks of a concentrated LNG import basket.

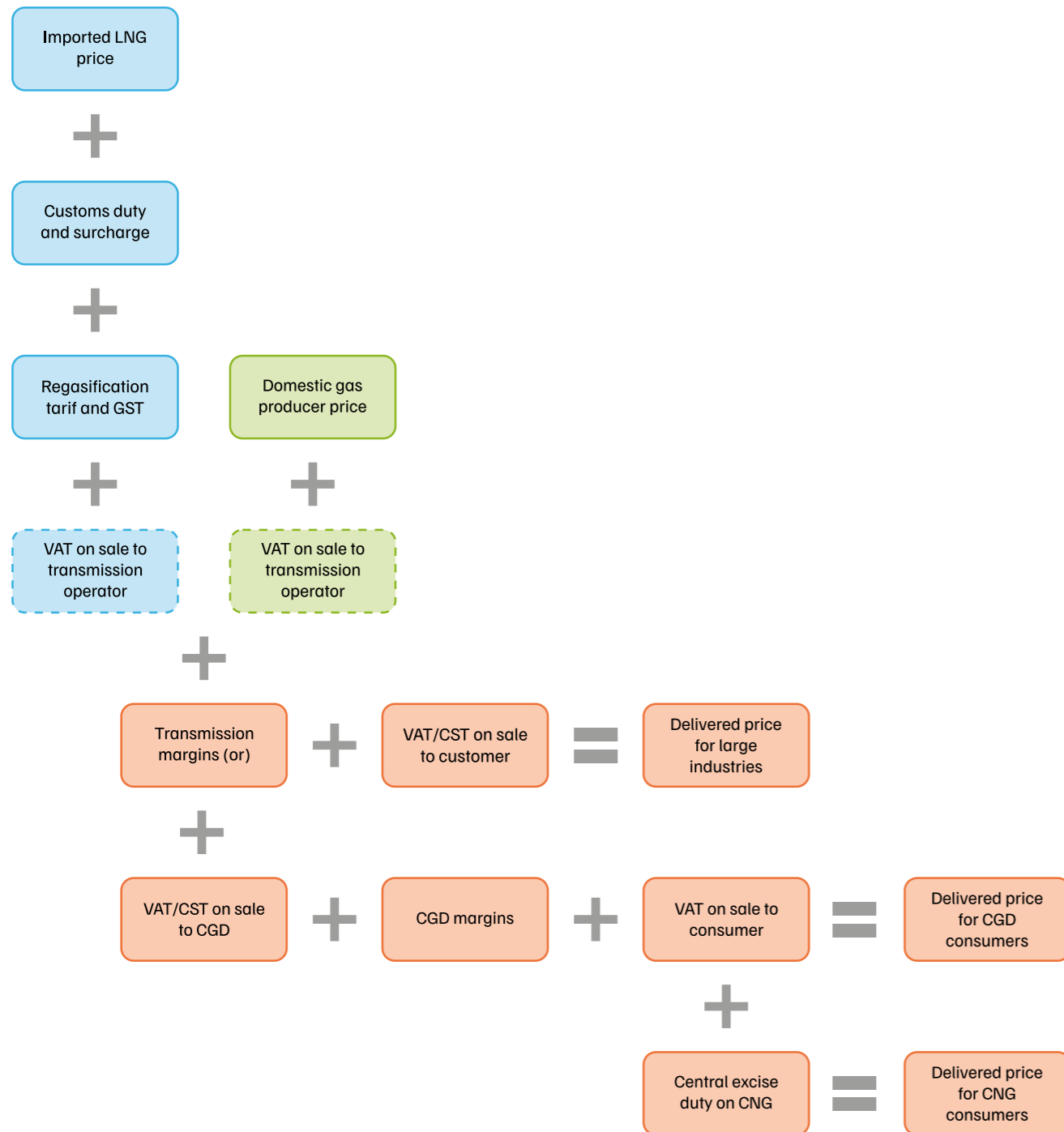
declaration or withdrawal of exclusivity has resulted in numerous disputes between CGD operators and consumers (PNGRB n.d.a). The current regulatory framework also creates uncertainties for non-CGD entities offering small-scale LNG services, i.e., direct LNG delivery from terminals to consumers via road or rail (Elango and Mallya 2021). Further, exclusivity provisions for CGD operators restrict small industrial consumers (with demand below 50,000 cubic metres per day) from participating in the Indian Gas Exchange (IGX), which enables transparent and automated procurement and trading. Recent regulations governing LNG terminals have also excluded a provision requiring 20 per cent of terminal capacity to be reserved for common access; i.e. this capacity could be used by any entity to import their own LNG using the terminal. The removal of this requirement further limits consumers' ability to independently access global markets for potentially cheaper spot or short-term LNG volumes.

- Natural gas taxation and pricing structure:** Several petroleum products, such as LPG, naphtha, and fuel oil, have transitioned from the earlier value-added

tax (VAT) regime to the more streamlined goods and services tax (GST) regime. However, natural gas – along with crude oil, motor spirit, high-speed diesel, and aviation turbine fuel – remains under the VAT regime (or sales tax regime in some states) despite being constitutionally included under GST goods (PIB 2019).

A primary barrier to including natural gas under GST is the significant revenue concern among state governments. Unlike GST, VAT and sales tax rates are determined by state governments, resulting in substantial variations in tax brackets for natural gas across states – from 0 per cent in Delhi up to 25 per cent in Chhattisgarh. Additionally, the sales tax regime lacks provisions for input tax credits, leading to cascading taxes borne by the consumer. The application of GST to some parts of the value chain also complicates input tax credit claims. Figure 11 shows the price build-up and cascading tax components associated with natural gas in India.

Figure 11. Natural gas price build-up in India (estimated)



Source: Authors' illustration

Note: 1. VAT in dotted lines is likely applied only when the transmission operator procures the gas and resells it to the consumer (i.e. the transmission operator also acts as a gas marketer).
 2. Interstate sale of goods may also attract a central sales tax (2 per cent); however, its applicability is unclear and omitted from this illustration.

5. Recommendations to unlock natural gas potential

The GoI introduced key policies and regulations to foster the adoption of natural gas, aiming to incentivise infrastructure development and prioritise certain price-sensitive sectors (see Annexure). However, unlocking the full potential of gas will require addressing existing barriers and deploying targeted policy interventions.

- Recalibrate national targets for natural gas:**
 The GoI's target of achieving a 15 per cent share of gas in India's primary energy mix by 2030 is unlikely to be achieved at the current growth rate. The government should break down this aggregate target into complementary sector-specific targets where gas can play an important role in supporting the shift to clean energy without slowing the pace of the transition, such as in steel and heavy-duty road transport. Sector-level targets will also provide clearer policy signals to potential consumer groups for gas uptake, supplier groups for investments, and enable more directed policymaking.
- Diversify and hedge import sources:**
 India's significant dependence on Qatar for 40–50 per cent of its imports creates supply chain vulnerability. India signed nearly 11 Mtpa of new long-term contracts in 2024, 8 Mtpa of which were with Qatar (GIIGNL 2025). Entering more long-term contracts with countries like the US, Canada, Mozambique, Argentina, Australia and the UAE is crucial to secure supply chains and minimise exposure to volatile spot prices. These countries are adding substantial gas liquefaction capacities by 2030, signalling a sizeable increase in global LNG supply and potentially lower prices. India is already the largest export market for the UAE, constituting 50 per cent of its LNG exports in 2024 (GIIGNL 2025). This presents an opportunity for India to aggregate gas demand and negotiate new long-term contracts, which would be mutually beneficial to both sides by lowering procurement costs for India while providing demand certainty for exporters.
- Consolidate natural gas demand:**
 The government should establish a central entity, similar to the SECI, to consolidate gas demand

potential across sectors. Such an entity can establish baseline sectoral demand potential at various gas prices, providing clear visibility for bulk procurement and contract negotiations. For example, x bcm of demand available at a gas price of USD y/MBtu based on consumer expectations of economic viability. Such tiered demand aggregation will be useful for gas procurement and contract negotiations, as it provides clear visibility into demand at different price levels. For example, the steel industry may consume over 5 bcm of gas at delivered prices of USD 8/MBtu or below (Ministry of Steel 2024). The entity should prioritise demand aggregation for hard-to-abate growth sectors (such as steel) to secure long-term LNG contracts, while managing shorter-term flexible contracts for transitioning sectors. A similar approach is already used by GAIL (India) Ltd, which aggregates demand for urea manufacturing plants under the pooled gas pricing mechanism (MoPNG 2015).

- Strengthen government-to-government (G2G) cooperation and supply chain investments:**
 A G2G framework for long-term contracting of LNG volumes can help ensure that decisions made and contracts signed are not contested or revoked due to changes in political dispensation. The framework can also provide necessary financial guarantees for investors or subsidies as needed. Encouraging partner countries to invest across the natural gas supply chain can further enhance reliability and resilience during global political disruptions, as experienced during the Russia–Ukraine conflict.
- Include natural gas under GST:**
 Bringing natural gas under the GST regime will eliminate cascading taxes and significantly reduce the delivered price of gas to consumers. Currently, natural gas contributes a minority share of VAT and sales tax revenues for most states, with a few exceptions, such as Gujarat and Maharashtra, where gas adoption rates are much higher than average. For example, in 2023–24, central public sector enterprises paid over INR 2,50,000 crore in total sales taxes/VAT payments to all states, of which only

INR 15,644 crore was attributable to crude oil and natural gas (MoPNG 2025). Therefore, states must achieve consensus on GST rates at the earliest to improve fiscal efficiency. The government can also set tiered GST rates based on consumer segments to further control revenue shares and consumer protection; for example, GST inclusion can initially focus on only industrial consumers that rely on RLNG.

- **Reform infrastructure access and tariff mechanisms:** India's gas market is dominated by a few large vertically integrated players that manage both transportation (pipelines) and marketing (gas). This structure can create potential conflicts of interest, as entities controlling transmission infrastructure may prioritise their own gas marketing operations over third-party access seekers. To ensure non-discriminatory access, transparency, and competition, an independent system operator must be established. Establishing clear separation between gas transportation and marketing will align with global best practices seen in mature gas markets, such as the EU and the UK. Independent transmission operators will ensure a fair allocation

of capacity and reduce entry barriers for new marketers, thereby enhancing market liquidity. Although unbundling reforms were proposed in India, the plan was later dropped (PTI 2021). The PNGRB has since published studies that support the unbundling of transmission system operation and gas production, marketing and distribution (PNGRB 2024b; PNGRB 2024c).

India should also plan to transition the gas market from the current point-to-point tariff system to an entry–exit tariff system. This shift would decouple gas sourcing from transport logistics, allowing consumers to switch suppliers instantly without rigid capacity bookings, thereby deepening market liquidity.

- **Align pipeline capacity access code with the requirements of gas power plants:** Gas-based power plants play an important role in meeting peak electricity demand. However, the current pipeline access rules lack the flexibility required to meet their needs. The access code should therefore be updated to allow 24x7 capacity booking through a single online platform, enabling power plants to book or



Image: iStock

Regulatory reforms to pipeline and terminal infrastructure will improve transparency, accessibility, and affordability for consumers.

release capacity in real time based on demand and generation schedules.

- **Expand natural gas trading through the exchange:** The IGX was established in 2020 as an automated national-level gas exchange. At present, only around 2 per cent of India's total gas demand is traded through the IGX. The exchange enables gas consumers to procure volumes under different contracts, such as day-ahead, daily, and weekly, thereby allowing flexible procurement from multiple suppliers, particularly in sectors such as CGD and power. It also facilitates efficient price discovery through double-sided closed auctions, where both buyers and sellers submit offers and bids to the market operator.

Expanding access to IGX for imported LNG volumes at additional ports will strengthen its role in improving market access and price discovery. Greater participation will also increase the liquidity and viability of the GIXI, reducing India's reliance on global indices that are often affected by global price shocks.

To promote more open market access through IGX, the PNGRB regulations governing marketing exclusivity for CGD networks should be amended to allow the regulator clearer authority to declare common carrier capacity after the stipulated period and terms. Additionally, PNGRB can revisit the provisions governing open-access capacity booking at LNG terminals, enabling independent consumers to procure LNG from the spot market and transport it through common-carrier capacity or trade it domestically through the IGX.

- **Develop or adapt methane control protocols:** Establishing standardised protocols to ensure methane emissions remain below acceptable thresholds is essential to prevent natural gas use from undermining its emissions advantage over coal. These protocols could either be developed

specifically for India or adapted from globally accepted protocols. Suitable agencies could include the Ministry of Petroleum and Natural Gas (MoPNG), the PNGRB, or the BEE under the Ministry of Power, which serves the nodal agency for managing India's Carbon Credit Trading Scheme.

- **Invest in turquoise hydrogen pilots:** Clean turquoise hydrogen can be produced from natural gas using pyrolysis technology, which generates solid carbon particles as a by-product (Prabhu et al. 2023). Compared with grey hydrogen, turquoise hydrogen can reduce CO₂ emissions by around 84 per cent, while potentially lowering production costs through revenue from carbon by-products. Significant quantities of carbon black and coking coal imports can be avoided by using pyrolysis carbon in these industries. Some pyrolysis processes are also capable of producing higher-value by-products, such as graphite, which can be used in battery manufacturing. Globally, several players are developing pyrolysis technology for hydrogen production, with some projects achieving technology readiness levels of up to 7 (full-scale commercial pilot) (Prabhu et al. 2023). Deploying pilot plants in India can help assess the viability of this technology and scale it to build demand for hydrogen in industries and other end consumers.
- **Leverage natural gas to access new markets or increase share:** Non-tariff trade measures, such as the EU's Carbon Border Adjustment Mechanism (CBAM), which aim to curtail imports of polluting commodities, could be an opportunity for India. Although India's steel exports to the EU are marginal compared with domestic consumption (Department of Commerce 2025), the deployment of gas-based capacity could give India a competitive advantage over other countries by making exports relatively cheaper while still complying with CBAM regulations.

Annexure

Government policies on gas

The GoI has developed several key policies and regulations to foster the adoption of natural gas and displace oil demand. Primarily, these policies seek to:

- Incentivise the development of gas supply infrastructure.
- Prioritise the growth of certain price-sensitive sectors.

This section provides an overview of key natural gas policies in India.

Domestic gas pricing

Domestically sourced natural gas in India is priced based on the guidelines and pricing policy issued by the MoPNG. Currently, four different pricing regimes apply, depending on the producing entity and the field from which the gas is extracted. Table A1 provides a brief overview of these regimes.

Table A1. Domestic gas pricing regimes applicable in India in 2025

Pricing regime	Policy	Applicable fields	Price formula	Note
Domestic gas price through the Administered Price Mechanism (APM) (ONGC/Oil India Limited [OIL] nomination fields)	(MoPNG 2023b)	'Nomination' fields of ONGC and OIL (pre-1990s)	10% of the Indian crude basket price (as defined by PPAC) Floor price = USD 4/MBtu Ceiling price = USD 6.75/MBtu	<ul style="list-style-type: none"> • Revised monthly • Ceiling price increases by USD 0.25/MBtu annually. • Gas from new wells or well interventions in these fields can have a 20% price premium.
Domestic gas price (non-APM) (pre-NELP and NELP blocks)	(MoPNG 2023b)	Pre-New Exploration and Licensing Policy (NELP) fields (1991–93) and NELP fields (1999–2012)	10% of the Indian crude basket price (as defined by PPAC) without floor and ceiling prices.	
Marketing/Pricing freedom for gas from deepwater, ultra-deepwater, and high-pressure/high-temperature areas	(MoPNG 2016)	All discoveries in deepwater, ultra-deepwater, and high-pressure/high-temperature fields post-2016	Ceiling price lowest of: <ul style="list-style-type: none"> • Landed price of imported fuel oil. • Weighted average landed price of substitute fuels 	<ul style="list-style-type: none"> • Revised every six months. • Most prominent fields under these regimes include KG-D5 and KG-D6 in the KG basin.

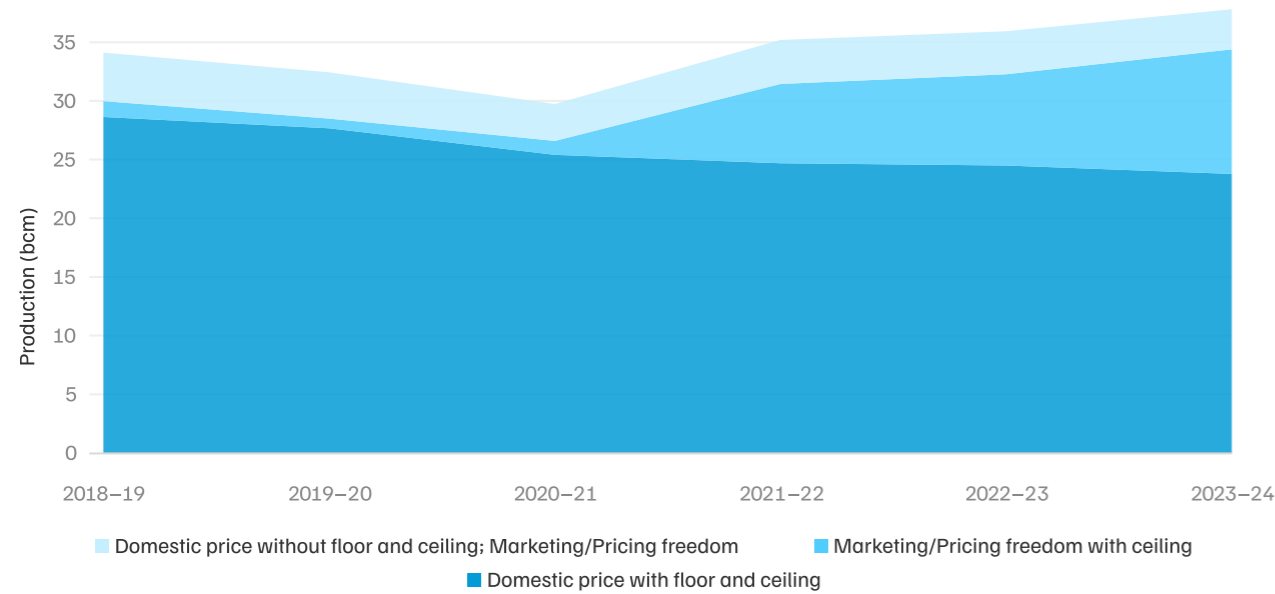
Pricing regime	Policy	Applicable fields	Price formula	Note
Marketing and pricing freedom	(MoPNG 2023a MoPNG 2023b)	Fields under the Hydrocarbon Exploration and Licensing Policy (2016–), Discovered Small Field (DSF) Policy, coal bed methane (CBM) blocks, new discoveries in nomination fields, and new production from pre-NELP and NELP fields in the northeast.	Price discovery through the e-bidding process introduced in 2023.	<ul style="list-style-type: none"> • Applicable to new discoveries in ONGC/OIL nomination blocks for which field development plans were approved post February 2019 • Applicable to new and existing discoveries in pre-NELP and NELP fields in the northeast that started production after July 2018.

Source: Authors' compilation based on sources listed above.

Figure A1 shows the approximate gas production by pricing regime. Of the total domestic gas production of 36.4 bcm in 2023–24, approximately 65 per cent was from price-controlled ONGC/OIL fields (MoPNG 2025). The production share and absolute volumes from these fields have been declining in recent years, while

production from high-pressure/high-temperature (HP/HT) fields (with pricing freedom up to a ceiling) and other fields with complete pricing freedom have increased. As a result, a lesser volume of price-controlled gas is available alongside the slow pace of overall domestic gas development.

Figure A1. Approximate domestic gas production by pricing regime (2018–24)



Source: MoPNG (Ministry of Petroleum and Natural Gas). 2025. Indian Petroleum and Natural Gas Statistics.

Regulations for transmission and distribution pipeline operators:

India has over 25,000 km of long-distance transmission pipelines in operation as of December 2024, with an additional 10,000 km under construction (PNGRB n.d.b). As of February 2025, the local distribution pipeline network totalled over 2,75,000 inch-km and is expected to double in newly authorised areas (PNGRB n.d.b). In total, 307 geographical areas (GAs), covering almost 100 per cent of the country, have been authorised for the development of local distribution networks (PIB 2025c).

Transmission and distribution pipeline networks in India are governed by regulations set by the PNGRB. The PNGRB authorises entities to lay, build, operate, or expand natural gas transmission pipelines and city or local distribution networks. It also stipulates the minimum level and quality of service to be achieved by the entities and stipulates/authorises the tariff calculation for transporting gas through the transmission network. The regulations offer incentives for CGD operators – operators of local distribution networks supplied with gas through transmission pipelines. These CGD networks are operated by different entities across GAs allocated through competitive bidding conducted by the PNGRB. The CGD operators supply gas to residential, commercial, transport (CNG), and small industrial consumers (that consume less than 50,000 cubic metres per day; industries consuming larger volumes can access gas directly from transmission pipelines through tie-in connections or dedicated pipelines). The CGD operators

are granted marketing exclusivity for 6–8 years from the commencement of operations, during which the authorised CGD operator of a given GA is the sole marketer of gas to all eligible consumers in that region (PNGRB 2008). They are also granted exclusivity for the economic life of the project, allowing them to be the sole entity permitted to lay, build, or expand a CGD network within the given GA, provided the minimum service levels stipulated in the authorisation letter are met (PNGRB 2008).

While these exclusivity regulations are intended to foster investment and the rapid development of infrastructure, they could lead to reduced competition and unfair pricing. Ambiguity in the provisions related to the declaration or withdrawal of exclusivity has led to numerous disputes between CGD operators and consumers (PNGRB n.d.a). The current regulatory framework also creates uncertainties for non-CGD entities seeking to offer small-scale LNG services, such as direct delivery of LNG from the terminals to the consumers via road or rail (Elango and Mallya 2021).

Priority allocation policy for domestic gas: The MoPNG facilitates the allocation of price-controlled domestic gas to certain price-sensitive sectors, including gas-based power, residential gas, and CNG for transport. Gas-based power in India is highly price-sensitive and relies on domestic gas volumes to operate. More than 80 per cent of the gas consumed by power plants is price-controlled domestic gas (CEA 2025). However, due to limited

domestic volumes and the high cost of gas-based power, these plants consume only ~15 per cent of their allocated domestic gas (CEA 2025).

Residential gas and CNG for transport, both supplied through CGD networks, are intended to be allocated domestic gas which meets 100 per cent of their requirements. Residential gas competes with LPG, a commodity that relies heavily on direct imports and crude oil imports. India's dependence on crude oil imports (88 per cent) is significantly higher than its dependence on natural gas imports. Therefore, the government aims to shift residential consumers to natural gas to reduce India's import exposure. Allocating domestic gas to this sector helps maintain a price advantage for natural gas over LPG. Similarly, greater CNG penetration in transport offsets the demand for petrol and diesel, both of which are derived from imported crude oil. Domestic gas allocation allows CNG to be priced lower than petrol and diesel, thereby encouraging its adoption.

As shown in Figure 10, the availability of price-controlled volumes is declining. As a result, even these priority sectors face shortfalls, necessitating blending with RLNG to meet demand. As RLNG is 30–40 per cent more expensive, greater RLNG blending increases the delivered price of gas. It also exposes these sectors to price shocks, especially when shortfalls are met through short-term or spot imports, which lack the price floors and ceilings typical of long-term contracts. Due to higher demand growth in these sectors than domestic production growth, the need for additional RLNG volumes is inevitable. Negotiating long-term LNG import contracts at favourable prices will therefore be important for maintaining affordable gas supply.

Pooled gas pricing mechanism for fertiliser plants:

Fertiliser manufacturing in India receives subsidies of ~USD 20 billion annually (primarily for urea fertilisers) (MoF 2023) to support the largely agrarian population. To improve efficiency and reduce the subsidy burden, urea manufacturing plants across the country were gradually shifted from naphtha-based production to natural gas-based production. However, gas prices varied substantially across different plants in the country, affecting their margins and increasing the subsidy burden. In addition, although fertiliser was previously among the priority sectors allocated 100 per cent

domestic gas, the sector now relies primarily on RLNG to meet demand, thus increasing the subsidy burden.

In response, in 2015, the MoPNG introduced a policy for pooling domestic gas and RLNG for urea manufacturing plants (MoPNG 2015). Under this pooling mechanism, all urea plants in the country pay a uniform price for gas. The pool operator, GAIL Ltd, which operates the largest transmission pipeline network, maintains the same blend of domestic gas and RLNG across all plants by querying quarterly demand-side gas requirements and meeting projected supply-side shortfalls through LNG imports. This pooling mechanism allows for more predictable, lower overall average gas prices, thereby reducing subsidy expenditure.

Compressed biogas blending mandate: The GoI launched the Sustainable Alternative Towards Affordable Transportation (SATAT) initiative on 1 October 2018 to establish an ecosystem for producing compressed biogas (CBG) from various waste and biomass residue sources and promote its use. Building on this initiative, the National Biofuels Coordination Committee introduced a mandate requiring CGD operators to blend CBG in residential gas and CNG for transport. The blending obligation was set at 1, 3, and 4 per cent by volume in 2025–26, 2026–27, and 2027–28, respectively, increasing to 5 per cent from 2028–29 onwards. The mandate aims to support import offsets and to provide an alternative domestic source of gas.

Unit tariff system for integrated pipeline networks:

In 2024, the PNGRB notified amended regulations to calculate unified tariffs over three zones (<300 km from injection to withdrawal, 300–1,200 km, and >1,200 km) for the entire interconnected pipeline network (instead of zone-wise tariffs for each pipeline in a network) (PNGRB 2024d). With the amendments, consumers in peripheral and interior regions will pay similar tariffs on gas transmission, making gas more uniformly affordable and accessible to all consumers, especially those located far from LNG terminals and production sites.

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