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Strategic Advisory Report

Industrial Impact of Natural Gas Supply Cut

Focus: Fertilisers

March 2026

India’s Import Landscape

HS271111 corresponds to Liquefied Natural Gas (LNG) under the broader category of petroleum gases and other gaseous hydrocarbons. LNG is a critical energy input for several sectors in India, including fertilizers, petrochemicals, chemicals, ceramics, glass, textiles, and steel (particularly Direct Reduced Iron units). As domestic natural gas production remains insufficient to meet demand, India relies heavily on imports to ensure energy security and industrial continuity.

Over the past five years, India’s imports of HS271111 have shown significant fluctuations, reflecting global energy market volatility, demand recovery after the pandemic, and geopolitical developments affecting LNG supply chains.

Table: India’s import value of HS271111 (in US\$ billions)

India’s Top Importers 2024	2020	2021	2022	2023	2024
Qatar	3.34	4.76	8.54	6.53	6.50 (43%)
United States of America	0.83	2.07	1.75	1.43	2.57 (17%)
United Arab Emirates	0.79	1.50	2.85	2.23	1.74 (11%)
Angola	0.60	0.63	0.56	0.45	1.07 (7%)
Oman	0.38	0.74	1.03	0.45	0.81 (5%)
Nigeria	0.90	0.85	1.00	0.42	0.81 (5%)
India’s Total Imports of HS2711	7.91	12.08	17.77	13.26	15.21

Source: International Trade Centre

India’s LNG import basket is moderately concentrated, with Qatar accounting for around 43% of imports in 2024, making it the dominant supplier. Other important suppliers include the United States, United Arab Emirates, Angola, Oman, and Nigeria.

Two structural patterns emerge from the data:

- Strong Dependence on Middle Eastern Suppliers: A substantial share of LNG imports originates from the Middle East (Qatar, UAE, and Oman). This increases exposure to geopolitical tensions in the region.
- Growing Diversification: Imports from the United States and African suppliers such as Angola and Nigeria have increased, reflecting efforts to diversify sourcing and reduce regional concentration risk.

Despite diversification efforts, the Middle East remains a crucial node in India’s LNG supply chain due to geographic proximity, established long-term contracts, and competitive pricing.

Given the scale of LNG imports and the concentration of suppliers in the Middle East, a prolonged regional conflict could have several consequences for India:

- Short-term price increases due to market uncertainty and higher freight costs
- Supply disruptions or shipment delays, particularly from Qatar and other Gulf suppliers
- Greater reliance on alternative suppliers, such as the United States and African exporters
- Increased volatility in domestic gas availability, affecting energy-intensive industries

Impact Assessment

The fertilizer industry is one of the most gas-intensive industrial sectors. Natural gas is used both as a feedstock for ammonia production and as a process fuel. As a result, disruptions in natural gas supply directly affect production capacity, plant utilization, and sector output. To assess this exposure, a scenario-based analysis was conducted to estimate the production and revenue impact under different levels of gas supply reduction.

Why will disruption occur?

Fertilizer plants, especially urea plants, depend on continuous, uninterrupted natural gas feedstock for ammonia synthesis. Gas is not just fuel; it is the chemical input required for the Haber–Bosch process. Any pressure drop in the upstream gas grid directly decelerates ammonia loop kinetics.

Where technical bottlenecks appear

- Ammonia converters cannot be cycled frequently without thermal stress and catalyst degradation.
- Steam-methane reformers require stable gas pressure; fluctuations destabilize H_2/N_2 ratios.
- Plants that have dual-feed capability (naphtha/fuel oil) can switch, but switching requires burner tuning, emissions clearance, and produces lower efficiency.

Expected disruption intensity

Supply disruptions may lead to:

- Reduced ammonia production due to feedstock shortages.
- Lower capacity utilization in urea plants that rely on continuous gas supply.
- Increased production costs if plants shift to alternative feedstocks such as naphtha or fuel oil.
- Potential need for higher fertilizer imports if domestic output declines.

Analytical Approach

The analysis evaluates four gas supply disruption scenarios—10%, 20%, 30%, and 40% supply cuts. The fertilizer sector is assumed to have 80% gas dependency, reflecting the high reliance of ammonia and urea production processes on natural gas.

Production impact is estimated using a proportional relationship between gas dependency and supply reduction. The resulting production loss percentage is applied to the sector's revenue baseline to estimate potential economic impact.

The fertilizer sector's average revenue is estimated at ₹12,05,70,37,467, which serves as the reference value for calculating losses under different supply disruption scenarios.

Scenario Analysis

Under a 10% gas supply disruption, the fertilizer sector would experience an estimated 8% production impact, resulting in a potential revenue loss of approximately ₹96.45 crore. At this level, operations may continue with moderate adjustments such as partial capacity reduction or operational optimization.

If gas supply declines by 20%, the production impact rises to 16%, with estimated revenue losses of approximately ₹192.91 crore. At this stage, some production units may face reduced operating rates, particularly plants with limited operational flexibility.

Under a 30% supply disruption, production impact increases to 24%, translating into estimated losses of approximately ₹289.36 crore. This level of disruption could lead to substantial capacity underutilization and increased pressure on fertilizer supply chains.

In a severe disruption scenario of 40%, production impact could reach 32%, resulting in estimated revenue losses of approximately ₹385.82 crore. At this stage, significant production curtailment may occur, and supply constraints could affect fertilizer availability in the domestic market.

Scenario	Gas Supply Cut	Gas Dependency	Production Impact	Revenue (₹)	Estimated Revenue Loss (₹)
Scenario 1	10%	80%	8%	1,205.70 crores	96.45 crores
Scenario 2	20%		16%		192.91 crores
Scenario 3	30%		24%		289.36 crores
Scenario 4	40%		32%		385.82 crores

Strategic Implications

The analysis highlights the high structural dependence of fertilizer production on natural gas availability. Even moderate supply disruptions can significantly affect production volumes due to the central role of gas in ammonia synthesis.

A sustained reduction in gas supply could also affect fertilizer availability, agricultural input costs, and food supply stability, particularly during peak cropping seasons.

Conclusions

A structured impact assessment reveals the following insights:

- Fertilizers, with an 80% dependency on natural gas, face substantial operational risk. Even moderate supply cuts can directly reduce ammonia synthesis rates, forcing lower urea production and potentially affecting agricultural supply chains. Estimated revenue losses range from ₹96 crore (10% cut) to ₹386 crore (40% cut).

MFS Offerings

Following our sectoral engagements, we invite industry leaders to connect with MFS for a customised impact assessment report tailored to their specific operations. Our assessment provides clear, actionable intelligence to support urgent decision-making during the ongoing gas supply constraints. Your customised report will answer:

- **What proportion of your production is at risk?** Quantified impact based on your plant configuration, dependency levels, and process sensitivity.
- **What is the estimated revenue loss?** Data-driven financial analysis under multiple supply-cut scenarios.
- **What is the potential loss in export value?** Insight into downstream trade implications and implications for global commitments.

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