NSE NATURAL GAS DERIVATIVES Performance Review 2025-26

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Performance Review of Commodity Derivatives - FY 2025-26

Natural Gas Futures, Natural Gas Options on Futures and Natural Gas Mini Futures

1. **Background**

a. Brief about the commodity such as sample picture, lifecycle and various varieties/grade of the commodity found in India

Natural gas is a colourless, odourless, highly flammable gaseous hydrocarbon which gives off a great deal of energy when burned. Although it consists primarily of methane, it can also contain ethane, propane, butane and pentane. These coproducts, once removed from the gas stream, are called natural gas liquids (NGLs). Natural gas is relatively clean burning, emitting relatively low levels of harmful combustion by-products. Although there is some evidence for the abiogenic existence of methane in the earth's mantle, most geologists favour the view that gas, like coal and oil, was formed via the compression and decomposition of organic material over long periods of time. It is typically found in the same geologic formations below the Earth's surface that trap oil, that is, in permeable mineral layers that are capped by non-porous sedimentary rock.

Like oil, natural gas is described as sweet or sour depending on, in the case of gas, its hydrogen sulphide content. Hydrogen sulphide is highly poisonous and is removed during processing. Because methane is odourless, natural gas distribution companies add a harmless, but stinky chemical (mercaptans) to the gas prior to distribution to end-users so that consumers can more easily detect leak.

b. Commodity fundamentals and balance sheet as per the following format (to be prepared based on publicly available information on best effort basis):

Table – Fundamentals & Balance Sheet (billion cubic metres)

Global Scenario	**2024**	**2025**
Production	4,124	-
Consumption	4,128	-
Inter-regional Trade	885	-

Source: Statistical Review of World Energy 2025, Energy Institute

Natural Gas India Balance Sheet (MMSCM) (Th Tonnes)

Indian Scenario	**2024-25**	**2025-26**
Production	35,594	34,326
Import	35,720	34,216
Consumption	71,314	68,542

Source: Petroleum Planning and Analysis Cell, MoPNG, GOI

Top 10 major producing countries (billion cubic metres)

Name of the country	**2024**	**2025**

United States	1,033	-
Russia	630	-
Iran	263	-
China	248	-
Canada	194	-
Qatar	179	-
Australia	150	-
Saudi Arabia	121	-
Norway	113	-
Algeria	95	-

Source: Statistical Review of World Energy 2025, Energy Institute

Top 10 major consuming countries (billion cubic meters)

Countries	2024	2025
United States	902	-
Russia Federation	477	-
China	434	-
Iran	245	-
Canada	129	-
Saudi Arabia	121	-
Mexico	100	-
Japan	91	-
Germany	79	-
United Arab Emirates	71	-

Source: Statistical Review of World Energy 2025, Energy Institute

Top 10 major exporting countries/regions (billion cubic meters)

Countries	2024	2025
United States	115.2	-
Qatar	106.9	-
Australia	106.8	-
Russia	44.3	-
Malaysia	36.0	-
Nigeria	18.4	-
Indonesia	16.5	-
Algeria	16.0	-
Oman	16.0	-

Papua New Guinea	11.1	-

Source: LNG Exports - Statistical Review of World Energy 2025, Energy Institute

Top 10 major importing countries/regions (billion cubic meters)

Countries	2024	2025
China	105.2	-
Japan	89.0	-
South Korea	63.6	-
India	37.9	-
Taiwan	29.1	-
France	25.7	-
Spain	18.4	-
Thailand	15.8	-
Italy	14.6	-
Turkey	12.0	-

Source: Statistical Review of World Energy 2025, Energy Institute

Top Major Natural Gas Producing States in India (MMSCM) Million Standard Cubic Metres.

Name of the State	2025-26
Mumbai High + Eastern Offshore + Western Offshore	24,696
Assam & Arunachal Pradesh	3,325
Rajasthan	1,483
Tripura	1,212
Gujarat	1,003
Tamil Nadu	941
Andhra Pradesh	702
West Bengal	401
Madhya Pradesh	320
Jharkhand	83

Source: Petroleum Planning and Analysis Cell, MoPNG, GOI

c. Major changes in the polices governing trade in the spot markets of the commodity.

Pipeline & Market Access Reforms

- Unified Pipeline Tariff (UPT): As of December 2025, around 90% of operational natural gas pipelines were covered under the UPT regime, strengthening the One Nation, One Grid, and One Tariff framework.
- National Gas Grid Expansion: The operational pipeline network reached 25,429 km, with 10,459 km under execution.
- **Natural Gas and Petroleum Products Distribution (Through Laying, Building, Operation and Expansion of Pipelines and Other Facilities) Order, 2026**. Introduced time-bound approvals, deemed clearances, and standardized procedures for pipeline development.

Gas Market & Trading Reforms

- Petroleum and Natural Gas Regulatory Board Reforms: Proposed third-party access to pipelines and CGD networks, gas exchange reforms, and an Independent Transmission System Operator (TSO).
- IGX Growth: Traded volume reached 76.8 million MMBtu (1,935 MMSCM) in FY26, up 28% YoY, with 1,924 trades executed.

Price & Allocation Reforms

- Domestic Gas Pricing: Domestic natural gas prices were revised periodically during FY 2025-26 under the revised pricing framework, with the APM gas price notified at US$ 6.25/MMMBTU for January 2026
- Gas Allocation Guidelines: Revised allocation mechanism introduced to better align gas supply with consumption requirements.

LNG Supply & Energy Security Initiatives

- Long-term LNG supply agreements: GSPC signed a 10-year LNG agreement with Uniper (0.5 MTPA), while ADNOC Gas signed a 10-year LNG agreement with HPCL (0.5 MTPA) valued at approximately US$2.5-3 billion, strengthening India's long-term LNG supply security.
- Supply resilience measures: Petronet LNG received approval for an additional 5 MMTPA regasification capacity at Dahej, increasing total capacity to 22.5 MMTPA effective March 2026, while LNG cargoes were sourced through alternative suppliers and routes during the West Asia disruptions.

d. Geopolitical issues in the commodity and its impact on the Indian scenario

Geopolitical tensions in West Asia and disruptions around the Strait of Hormuz significantly influenced India's natural gas sector during FY26, highlighting the importance of energy security and supply diversification.

Key Developments

- Supply Disruptions: Approximately 47.4 MMSCMD of natural gas supply was affected due to force majeure conditions applied during the West Asia conflict (Information updated from PIB till 11th March 2026).
- Alternative LNG Sourcing: LNG cargoes were secured from alternate suppliers and routes to maintain domestic availability.
- Government Intervention: The Natural Gas (Supply Regulation) Order, 2026, was issued to safeguard priority sectors, while domestic PNG and CNG segments continued to receive full supply allocation.

2. Trading related parameter

NSE had the following Natural Gas derivatives available for trading on its Commodity Derivatives Segment in FY 2025-26.

- Natural Gas Futures

- Natural Gas Options on Futures
- Natural Gas Mini Futures

a. Monthly and Annual traded volume (quantity in appropriate units)

The traded volume for Natural Gas Futures, natural Gas Options on Futures and Natural Gas Mini Futures in FY 25-26 was NIL/Negligible.

b. Annual traded volume as proportion of total deliverable supply (quantity in appropriate units)

The traded volume for Natural Gas Futures, natural Gas Options on Futures and Natural Gas Mini Futures in FY 25-26 was NIL/Negligible.

c. Annual traded volume as proportion of total annual production (quantity in appropriate units)

The traded volume for Natural Gas Futures, natural Gas Options on Futures and Natural Gas Mini Futures in FY 25-26 was NIL/Negligible.

d. Annual average Open interest as proportion of total production

The traded volume for Natural Gas Futures, natural Gas Options on Futures and Natural Gas Mini Futures in FY 25-26 was NIL/Negligible.

e. Annual average Open interest as proportion of total deliverable supply

The traded volume for Natural Gas Futures, natural Gas Options on Futures and Natural Gas Mini Futures in FY 25-26 was NIL/Negligible.

f. Monthly and Annual value of trade (in Rs. Crores)

The traded volume for Natural Gas Futures, natural Gas Options on Futures and Natural Gas Mini Futures in FY 25-26 was NIL/Negligible.

g. Monthly and Annual quantity of delivery (in appropriate units)

Natural Gas derivatives are Cash Settled contracts. Thus, the same is not applicable.

h. Monthly and Annual value of delivery (in Rs. Crores)

Natural Gas derivatives are Cash Settled contracts. Thus, the same is not applicable.

i. Monthly and Annual Average Open Interest (OI) (in appropriate units)

The traded volume for Natural Gas Futures, natural Gas Options on Futures and Natural Gas Mini Futures in FY 25-26 was NIL/Negligible.

j. Annual average volume to open interest ratio

The traded volume for Natural Gas Futures, natural Gas Options on Futures and Natural Gas Mini Futures in FY 25-26 was NIL/Negligible.

k. Total number of unique members and clients who have traded during the financial year.

The traded volume for Natural Gas Mini Futures in FY 25-26 was NIL.

Contract	**Unique Member Count**	**Unique Client Count**
Natural Gas Futures	14	31
Natural Gas Options on Futures	48	240

l. Ratio of open interest by FPOs/farmers/Hedge/VCP positions to total open interest (Annual average as well as maximum daily value)

The traded volume by FPOs / farmers and VCPs/hedgers* for Natural Gas Derivatives in FY 2025-26 was NIL/Negligible.
***** Based on the self-declaration available for the categorization of clients/members

m. Number of unique FPOs / farmers and VCPs/hedgers who traded in the financial year.

The traded volume by FPOs / farmers and VCPs/hedgers* for Natural Gas Derivatives in FY 2025-26 was NIL/Negligible.
***** Based on the self-declaration available for the categorization of clients/members

n. Algorithmic trading as percentage of total trading

The traded volume for Natural Gas Mini Futures in FY 25-26 was NIL.

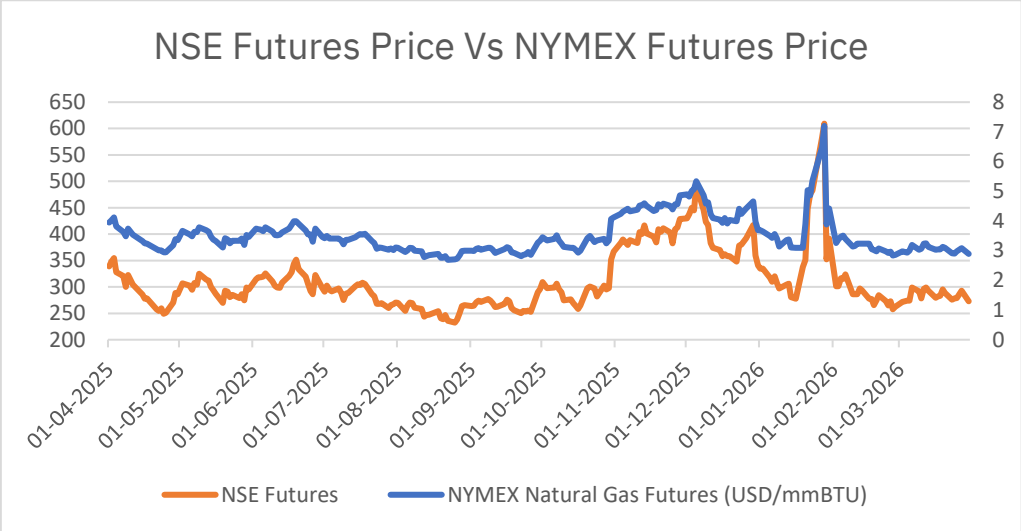
Contract	**Algorithmic trading as percentage of total trading (%)**
Natural Gas Futures	27.8
Natural Gas Options on Futures	41.6

o. **Delivery defaults**
i. **Number of instances**
ii. **Quantity involved**
iii. **Value involved**

Natural Gas derivatives are Cash Settled contracts. Thus, the same is not applicable.

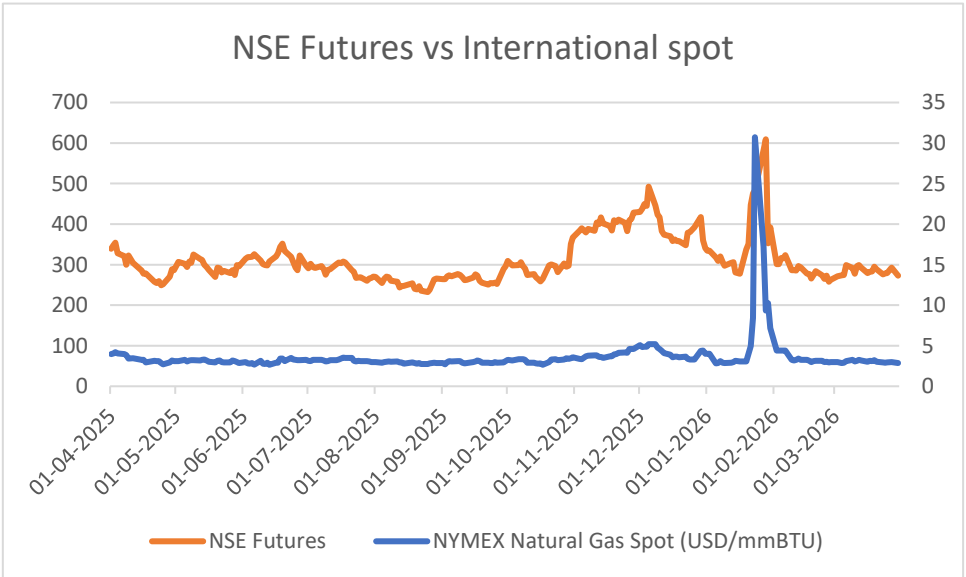
3. Price movements

a. **Comparison, correlation and ratio of standard deviation of Exchange futures price vis-à-vis international futures price (wherever relevant comparable are available)**



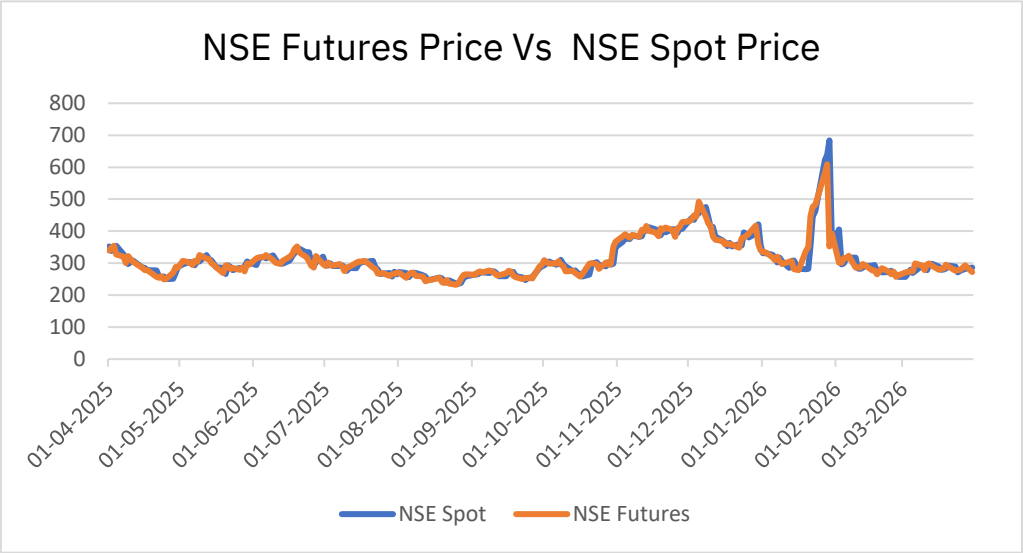
Correlation: 98.36% | Ratio of Std Deviation: 0.011

b. **Comparison, correlation and ratio of standard deviation of Exchange futures price vis-à-vis international spot price (wherever relevant comparable are available) and domestic spot price (exchange polled price).**



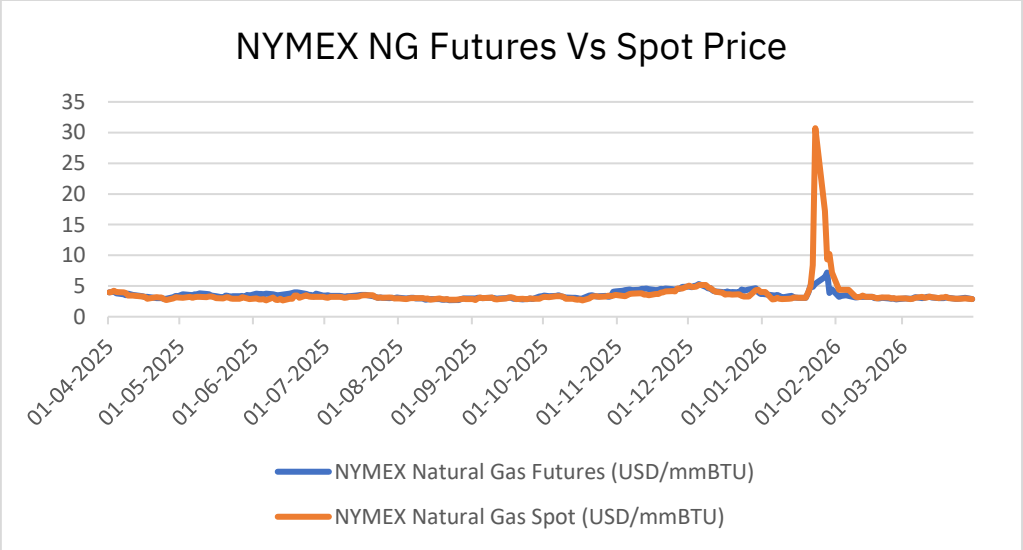
Correlation: 55.15% | Ratio of Std Deviation: 0.036

c. Correlation between exchange futures & domestic spot prices along with ratio of standard deviation.



Correlation: 90.30% | Ratio of Std Deviation: 1.08

d. Correlation between international futures & international spot prices along with ratio of standard deviation (wherever relevant comparable are available).



Correlation: 53.57% | Ratio of Std Deviation: 0.301

e. Comparison of Exchange polled price and mandi price (in case of agricultural commodities) / other relevant price (in case non-agricultural commodities) at basis centre.

Comparison could not be plotted as relevant domestic benchmark is unavailable in public domain.

f. Maximum & Minimum value of daily futures price volatility and spot price volatility along with disclosure of methodology adopted for computing the volatility.

Commodity	Max Volatility in Futures Prices (%)	Min Volatility in Futures Prices (%)	Max Volatility in Spot Prices (%)	Min Volatility in Spot Prices (%)
Natural Gas Futures	**42.15**	**0.00**	**47.32**	**0.02**

Volatility calculation: (Day – Previous day's price)/Previous day's price

g. Number of times the futures contract was in backwardation/contango by more than 4% for the near month contract in the period under review.

The traded volume for Natural Gas Futures, natural Gas Options on Futures and Natural Gas Mini Futures in FY 25-26 was NIL/Negligible.

Sources for this section: Trading view and NSE

4. Other parameters

a. Qualitative and quantitative measure for Hedge effectiveness ratio and basis Risk (Volatility of Basis) along with disclosure of methodology adopted for such calculations.

Date	Hedge Effectiveness Ratio
08-Apr-25	0.65
20-May-25	-0.83
20-Jun-25	-0.08
20-Jul-25	-1.20
22-Aug-25	-0.57
16-Oct-25	0.43
11-Nov-25	0.09
17-Dec-25	-2.71
08-Jan-26	-1.14
11-Feb-26	16.00
11-Mar-26	-0.54
Average	0.92

The Dollar Offset Method of determining Hedge Effectiveness is one of the quantitative methods used extensively. It involves comparing the ratio of the change in fair value or present value of future expected cash flows of the hedging instrument (NSE

Futures) with the change in the fair value or present value of future cash flows of the hedged item (Spot Price) attributable to the hedged risk.

Methodology
To examine the hedge effectiveness twelve random dates were chosen with minimum gap between the period as 15 days and maximum being 3 months period (matching various operating cycles of the bullion value chain participants). For each of these chosen dates, Spot Price and Futures closing rates were recorded. The change in value of Spot rates as well as Futures closing rates for two consecutive periods was recorded. Hedge effectiveness is the ratio of change in the value of Spot prices to the change in Futures value.

Values between 80% to 125% indicate the hedge effectiveness is good. Values below 80% indicate that the hedge effective is not good. Based on the observations, it can be noticed that overall hedge effectiveness is over 0.92.
Longer period hedge tends to be less effective. It could be due to roll-over and related contango issues or liquidity issues. Second aspect is when there is a disruptive change in the underlying market, hedge effectiveness declines.

Basis risk:
Basis is the difference between the spot price and the futures price at a particular point in time. Basis is usually very small and tends to decrease as futures contract moves towards expiry.

b. Details about major physical markets of the commodity vis-à-vis market reach in terms of availability of delivery centers (information to be provided state-wise and UT-wise).

Natural gas is used mainly in the industrial, commercial, transportation, and household sectors. The power and fertilizer sectors are the largest consumers of Natural Gas. In the case of Natural Gas, industries across the country, have exposure to Natural Gas. Natural Gas Derivatives are offered as cash settled products which such industry players can use to hedge their exposures without the necessity of taking physical delivery of Natural Gas.

c. Details about major physical markets of the commodity and average Open Interest for each month generated from those regions.

Natural gas is used mainly in the industrial, commercial, transportation, and household sectors. The power and fertilizer sectors are the largest consumers of Natural Gas. In the case of Natural Gas, industries across the country, have exposure to Natural Gas. The region wise OI data is not available.

d. Details, such as number and target audience, of stakeholders' awareness programs carried out by the exchange.

A total of 62 Commodity IAPs were conducted reaching out to 1987 participants. These participants included General public, faculties of educational institutes corporate employees, FPOs, Police officers and Women.

e. Steps taken / to be undertaken to improve hedging effectiveness of the contracts as well as to improve the performance of illiquid contracts.

NSE is constantly striving to encourage hedgers to participate in the Natural Gas contracts. We have value chain participants such as Bharat Petroleum Corporation Ltd (BPCL), Oil & Natural Gas Corporation (ONGC), Indian Oil Corporation (IOCL), Hindustan Petroleum Corporation Ltd (HPCL), Chennai Petroleum Corporation Ltd (CPCL), etc. as part of our Energy PAC, who guide us on how to get more participation from physical as well as other market participants.

5. Any other information to be disclosed as deemed important by the exchange or as suggested by the PAC.