

Impact of Gulf Geopolitical Conflicts on India's LPG Consumption, Imports, and Price Trends: A Secondary Data Analysis

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Abstract—This study examines the impact of Gulf geopolitical conflicts on India's Liquefied Petroleum Gas (LPG) consumption, imports, and domestic price trends. The study is based on secondary data collected from the Petroleum Planning and Analysis Cell (PPAC), Ministry of Petroleum and Natural Gas, and Indian Oil Corporation Limited for the period 2016 to 2026. A descriptive and analytical research design was adopted to examine changes in LPG consumption, import dependence, and price fluctuations over time. The findings show that LPG consumption increased from 21.61 million metric tonnes (MMT) in 2016 to 33.21 MMT in 2025, while LPG imports rose from 11.10 MMT to 20.67 MMT, indicating a substantial increase in India's dependence on imported LPG. Domestic LPG prices also exhibited considerable volatility, rising from ₹584 per cylinder in 2016 to a peak of ₹1,053 in 2022 before moderating in subsequent years. The study concludes that India's growing reliance on imported LPG has increased its exposure to global energy market fluctuations and geopolitical tensions in the Gulf region. The study suggests that strengthening domestic supply, expanding strategic storage capacity, and diversifying import sources are essential for improving India's long-term energy security.

Index Terms—Energy Security, Gulf Geopolitical Conflicts, Liquefied Petroleum Gas (LPG), LPG Imports, LPG Consumption, Price Volatility.

I. INTRODUCTION

Liquefied Petroleum Gas (LPG) has become one of the most important sources of household energy in India. Over the years, the use of LPG has increased significantly because it is considered a cleaner and safer cooking fuel compared to traditional sources such as firewood, crop residues, and kerosene. The shift towards LPG has contributed to reducing indoor

air pollution and improving the living conditions of many households, particularly in rural and semi-urban areas.

India's growing dependence on LPG has also increased the importance of energy security. As domestic demand has expanded rapidly, domestic production has not been sufficient to meet the rising consumption levels. As a result, India has become increasingly dependent on imported LPG. A substantial share of these imports comes from countries in the Gulf region, making India vulnerable to geopolitical tensions and disruptions in international energy markets.

Global conflicts and geopolitical instability in the Gulf region can affect LPG supply chains, transportation costs, and international fuel prices. Michail and Melas [3] observed that geopolitical risks have a significant influence on LPG and LNG shipping markets, often leading to higher transportation costs and price fluctuations. Such developments can directly affect countries like India that rely heavily on imported energy resources.

The expansion of LPG usage in India has also been influenced by government efforts to improve access to clean cooking fuel. Asharaf and Tol [1] found that the Pradhan Mantri Ujjwala Yojana helped improve LPG access among economically weaker households, although affordability remains an important concern for regular usage. This indicates that both supply conditions and price stability play an important role in determining LPG consumption patterns in India.

Although several studies have discussed energy security, LPG adoption, and global energy price movements, limited research has examined LPG consumption, imports, and domestic price trends together in the context of Gulf geopolitical conflicts.

Therefore, this study attempts to analyse the relationship between these factors using secondary data collected for the period 2016 to 2026.

The study aims to understand how geopolitical developments in the Gulf region influence India's LPG sector and what implications these changes have for the country's energy security. The findings may help policymakers understand the risks associated with increasing import dependence and the need for long-term strategies to strengthen domestic energy resilience.

II. REVIEW OF LITERATURE

1. **Energy Security and Import Dependence in India**
Energy security has become a critical issue for India because of its increasing dependence on imported fossil fuels. Yadav (2025) [7] emphasized that uninterrupted access to affordable and reliable energy is essential for economic growth, national security, and sustainable development. The study noted that India's heavy reliance on imported oil and gas exposes the country to supply disruptions and global price volatility. It further recommended diversification of energy sources, expansion of renewable energy, and strategic planning to strengthen national energy security.

2. **Geopolitical Risk and Global LPG Trade**
Geopolitical instability significantly influences global energy transportation and pricing. Michail and Melas (2022) [3] examined the relationship between geopolitical risk and LNG-LPG shipping markets and found that geopolitical shocks increase LPG freight rates by approximately 18 percent. Their findings indicate that international conflicts raise transportation costs, which are eventually transmitted to importing countries through higher domestic prices and inflation.

3. **Growth of LPG Consumption in India**
LPG consumption in India has increased rapidly over the past decade due to government initiatives and rising awareness of clean cooking fuels. Asharaf and Tol (2024) [1] evaluated the impact of the Pradhan Mantri Ujjwala Yojana and found that the programme significantly improved access to LPG among low-income households, although sustained usage depends on affordability and refill costs.

The study highlights that LPG has become a socially significant household energy source, making stable supply and affordable pricing increasingly important.

III. RESEARCH GAP

Many studies have discussed India's energy security, the effects of international conflicts, the increasing use of LPG, and the policies introduced by the government to improve access to clean cooking fuel. However, these topics are usually studied separately. Only a few studies have examined how conflicts in the Gulf region affect LPG consumption, imports, and prices in India together. This study attempts to fill that gap by analysing these three aspects using secondary data and by explaining how such changes influence India's energy security.

IV. OBJECTIVES OF THE STUDY

1. To examine the trends in LPG consumption, imports, and domestic prices in India assess the implications of India's import dependence for energy security.
2. To analyse LPG price volatility.

V. METHODOLOGY

The study adopts a descriptive and analytical research design based entirely on secondary data. Data on LPG consumption and imports were collected from the Petroleum Planning and Analysis Cell (PPAC), while domestic LPG price data were obtained from Indian Oil Corporation Limited and the Ministry of Petroleum and Natural Gas. The study covers the period from 2016 to 2026, with the 2026 figures treated as provisional because final annual statistics may be subject to revision. The analysis focuses on three variables: LPG consumption, LPG imports, and domestic LPG prices. Tabular presentation and descriptive trend analysis were used to examine changes in these variables and to assess their implications for India's energy security. The study is limited to publicly available secondary data and does not employ advanced statistical techniques such as regression analysis.

VI. LIMITATIONS

The study is based entirely on secondary data collected from official government sources. It examines only three variables: LPG consumption, imports, and prices. The analysis is descriptive in nature and does not use advanced statistical methods to establish a direct cause-and-effect relationship between Gulf conflicts and changes in the LPG sector. In addition, the 2026 figures are provisional and may be revised when final data are released. Therefore, the findings should be understood as an analysis of trends and patterns rather than precise causal measurements.

VII. DATA ANALYSIS AND INTERPRETATION

Trends in LPG Consumption, Imports and Prices in India (2016–2026)

Year	LPG Consumption (MMT)	LPG Import (MMT)	LPG Price (Rs. per Cylinder)
2016	21.61	11.10	584
2017	23.34	11.38	747
2018	24.91	13.24	809.5
2019	26.33	14.81	695
2020	27.56	16.48	694
2021	28.25	17.04	899.5
2022	28.50	18.34	1053
2023	29.66	18.51	903
2024	31.33	20.67	803
2025	33.21	20.67	853
2026	33.21	20.67	912

Source: Compiled from Petroleum Planning and Analysis Cell (PPAC), Ministry of Petroleum and Natural Gas, and Indian Oil Corporation Limited.

* Latest available full-year import figure used as a proxy for 2025.

* 2026 figures are provisional and are based on the latest available data from the Petroleum Planning and Analysis Cell (PPAC).

Table 7.1 shows the annual trends in LPG consumption, imports, and domestic prices in India from 2016 to 2026. LPG consumption increased from 21.61 million metric tonnes (MMT) in 2016 to 33.21 MMT in 2025, and the latest available data indicate that this level was broadly maintained in 2026. This reflects the steady growth in the use of LPG as a

household cooking fuel in India. LPG imports also increased significantly, rising from 11.10 MMT in 2016 to 20.67 MMT by 2024–25, and the provisional data for 2026 suggest that import dependence remained at a similarly high level. This indicates that India has become increasingly dependent on imported LPG to meet domestic demand. Domestic LPG prices showed considerable fluctuations during the study period. The price rose from ₹584 per cylinder in 2016 to a peak of ₹1,053 in 2022, declined to ₹803 in 2024, increased slightly to ₹853 in 2025, and reached approximately ₹912 in 2026. These fluctuations reflect the impact of global energy market conditions and geopolitical developments. Overall, the table demonstrates that the continuous growth in LPG consumption has been accompanied by rising import dependence and significant price volatility, making India's LPG sector more vulnerable to external shocks, particularly geopolitical tensions in the Gulf region.

VIII. FINDINGS

1. LPG consumption in India increased from 21.61 MMT in 2016 to 33.21 MMT in 2025, indicating substantial growth in the use of LPG as a household cooking fuel.
2. LPG imports rose from 11.10 MMT in 2016 to 20.67 MMT by 2024–25, demonstrating a significant increase in India's dependence on imported LPG.
3. Domestic LPG prices showed considerable volatility, increasing from ₹584 per cylinder in 2016 to a peak of ₹1,053 in 2022 before moderating in subsequent years.
4. The growth in LPG consumption has outpaced domestic production, resulting in a sharp rise in import dependence.
5. Increased reliance on imported LPG has made India more vulnerable to global energy market fluctuations and geopolitical disruptions in the Gulf region.
6. The steady increase in LPG consumption reflects the growing importance of LPG as a household cooking fuel and is consistent with broader policy efforts to expand access to clean cooking energy in India.
7. The study confirms that geopolitical instability in the Gulf region has important implications for

India's energy security and household energy affordability.

IX. CONCLUSION

The study shows that LPG consumption in India has increased steadily during the last ten years, highlighting the growing role of LPG in meeting household energy needs. During the same period, imports have risen sharply, indicating that domestic production has not kept pace with increasing demand. LPG prices have also shown significant fluctuations, especially during years of global energy uncertainty. Together, these trends indicate that India has become more dependent on imported LPG, making the country more sensitive to changes in international markets and geopolitical developments in the Gulf region. To reduce this vulnerability, India needs to strengthen domestic supply, increase storage capacity, and diversify its import sources.

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