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Impact of volatility in Global Crude oil prices on consumer demand in India

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Abstract

Raw petroleum also known as crude oil is used in transport, generating electricity and producing materials. Petroleum based products are used extensively in agriculture as it helps in running farm machinery and fertilizer plants. Petrochemicals are also used in manufacturing synthetic rubber which is further used to make rubber soles on shoes, car tire and other rubber products. Petroleum is also useful in transporting goods between different regions of India which impacts the prices of essential goods, as prices of fuel may change depending on the price of crude oil imported from the Middle East countries.

The decline in oil prices has several positive effects, including a reduced trade deficit, lower inflation and reduced government expenditure. However, it can also lead to a weaker rupee, reduced investment in domestic oil exploration, and short-term market volatility. Overall, the impact of lower oil prices is generally positive for the Indian economy, outweighing the potential downsides. Crude oil prices react to many variables including supply and demand prospects and the perceived risk of market disruptions. Economic growth can drive up the demand for crude oil, while slowdowns tend to lower demand and prices.

Therefore, oil companies would consider a cut in retail prices if global crude remained low for an extended period. Typically, the alignment of lower crude prices and the June 2024 Lok Sabha elections have resulted in a price cut. Due to cut in fuel prices, a part of the savings realized for car and two-wheeler users leads to spending in other sectors of the economy. Lowering international prices also reflects favourably on India's current account deficit as more than 85% of the nation's crude requirement is imported.

The paper focuses on the study of fuel prices in India during the period 2017-2024, the impact of government taxes on fuel prices and the future implementation of GST on fuel prices, making a positive

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impact on consumer demand of fuel thereby reducing transportation costs and estimating the probable price of petrol and diesel in 2025 through forecasting techniques.

Keywords: *petroleum, trade deficit, inflation, transportation, logistics*

Introduction

The recent rise in the prices of crude oil has drawn everyone's attention towards the crucial role that oil plays in the economy of any nation. Crude oil is one of the most necessitated commodities in the world and India imports around 100 million tons of crude oil and other petroleum products.

The global crude oil market is volatile, influenced by factors like geopolitical tensions, economic growth, and climate change policies. Fluctuations in oil prices have a significant impact on consumer demand in India, a major oil-consuming nation. Fluctuating oil prices directly influence the cost of transportation fuels, which can impact consumer spending on commuting and travel. Increased fuel costs can lead to higher transportation costs for businesses, which may be passed on to consumers in the form of higher prices for goods and services. The transportation sector, including airlines, railways, and trucking, is directly affected by fuel price fluctuations. Increased fuel costs can lead to higher transportation costs, which can be passed on to consumers in the form of higher prices for goods and services. Industries that rely heavily on petroleum-based raw materials or energy-intensive processes can see increased costs, which may be passed on to consumers. Volatile oil prices can create uncertainty among consumers, leading to cautious spending behaviour. Therefore, higher fuel prices can reduce disposable income, limiting spending on non-essential goods and services.

Volatility in global crude oil prices has a significant impact on consumer demand in India. By understanding these impacts, policymakers and businesses can develop strategies to mitigate the negative effects of price fluctuations and ensure the overall economic well-being of the country.

The Organization of the Petroleum Exporting Countries (OPEC) is a cartel enabling the co-operation of leading oil-producing and oil-dependent countries in order to collectively influence the global oil market and maximize profit. In a series of steps in the 1960s and 1970s, OPEC restructured the global system of oil production in favour of oil-producing states and away from an oligopoly of dominant Anglo-American oil firms. In the 1970s, restrictions in oil production led to a dramatic rise in oil prices with long-lasting and far-reaching consequences for the global economy. Since the 1980s, OPEC has had a limited impact on world oil-supply and oil-price stability, as there is frequent cheating by members on their commitments to one another, and as member commitments reflect what they would do even in the absence of OPEC.

Recently, Ministry of Petroleum and Natural Gas had said oil companies would be taking appropriate decisions on reducing fuel prices if international oil prices were to stay low for an extended period. The average annual price of Brent crude oil stood at 83.56 U.S. dollars per barrel in 2024, according to preliminary data from August. This is 16 U.S. dollars lower than the 2022 annual average, when an energy supply shortage and concerns over fallout from the Russia-Ukraine war saw prices surge. Brent is the world's leading price benchmark for Atlantic basin crude oils. Crude oil is one of the most closely observed commodity prices as it influences costs across all stages of the production process and consequently alters the price of consumer goods as well.

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Literature Review

The fluctuations in global crude oil prices significantly impact economies worldwide, and India, as one of the largest consumers of oil, is no exception. Understanding how a fall in crude oil prices affects consumer demand in India involves examining various dimensions, including economic factors, consumer behaviour, and sectoral impacts.

Several studies highlight that lower oil prices can lead to reduced inflationary pressures in India, which subsequently increases disposable income for consumers. This increased purchasing power can enhance consumer demand across various sectors (Rai & Singh, 2019). Research indicates that a fall in crude oil prices often correlates with an uptick in GDP growth, particularly in oil-importing countries like India. The positive correlation is attributed to reduced import bills and enhanced economic activity (Kumar & Sharma, 2020).The Indian government's response to global oil price changes, such as adjustments in fuel taxes and subsidies, can influence consumer demand. Some studies suggest that despite falling oil prices, high taxes can dampen the potential benefits for consumers (Choudhury & Ghosh, 2021). Research has shown that consumer demand for petroleum products is relatively inelastic in the short term. However, long-term adjustments may occur as consumers alter their consumption habits in response to sustained price changes (Ghosh & Banerjee, 2022). Lower oil prices can lead to a shift in consumer behaviour, promoting the use of more energy-intensive goods and services. For instance, the demand for automobiles and air travel tends to increase as fuel costs decrease (Joshi, 2021).

Interestingly, falling oil prices may also spur a decline in investments in renewable energy sources. Studies indicate that consumers might opt for cheaper fossil fuel options, impacting long-term sustainability efforts (Verma & Desai, 2020).The transport sector in India experiences a direct impact from changes in crude oil prices. Lower fuel costs often translate to reduced transportation costs, benefiting logistics and passenger transport services (Nayak & Patel, 2018).Lower oil prices reduce operational costs for manufacturing industries reliant on petroleum products, leading to potential increases in production and employment. This, in turn, can boost consumer demand as more people gain employment (Sharma & Kapoor, 2023).Agriculture, heavily dependent on diesel for machinery and transportation, often sees enhanced productivity and lower costs with falling oil prices. This can lead to lower food prices and increased consumer spending in other sectors (Singh & Mehta, 2022).

Research Methodology

This research will apply quantitative techniques to explore the impact of volatility in global crude oil prices on consumer demand and broader economic implications in India.

Research Design

The study will adopt a **descriptive and exploratory research design** to understand the dynamics of oil prices, their implications on the economy, and consumer demand regarding automobiles and electric vehicles.

The research design is critical in determining how to systematically investigate the impact of volatility in global crude oil prices on consumer demand and the broader economic context in India.

Objectives

The primary objectives of this research design include:

Exploring factors contributing to the global change in oil prices.

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Understanding the various consumption trends among the Indian states based on the contribution of state to the Indian GDP basket.

Data Collection

Secondary Data

Analyse existing research articles, reports, and economic analyses related to oil prices, economic impacts, and consumer behaviour in India.

Collect data from government publications, energy departments, and industry reports on historical oil prices, economic indicators (GDP)

Methodology of Study

Data was collected from government reports, industry publications, and market research surveys.

Key variables analysed include crude oil prices (USD/barrel), consumer demand for petrol (litres) and GDP.

Data Analysis

Perform trend analysis on historical oil price data and economic performance metrics to understand the price-consumption matrix across states in India

Understanding Crude oil price trends across periods

Year	2017	2018	2019	2020	2021	2022	2023	2024
Average Crude Oil Price(USD/Barrel)	54.57	71.34	64.39	41.84	70.16	95.47	75	72

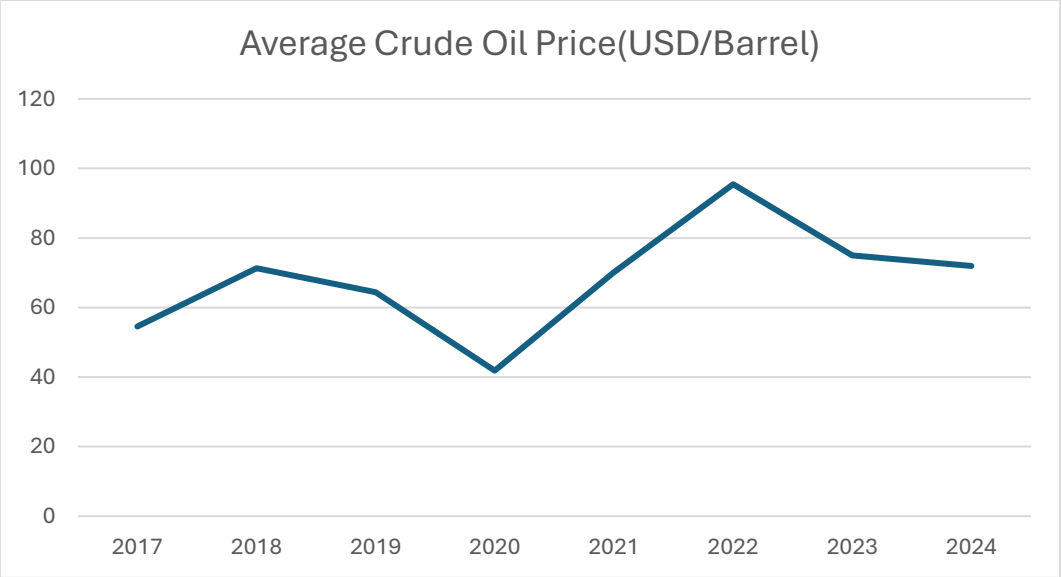

Fig 1: Trend Analysis Table of Crude Oil Prices in India (2017-2024)

Analysis of Crude Oil Prices on Consumer Demand in India Across Different States

The impact of crude oil prices on consumer demand in India can vary significantly across different states due to factors such as economic conditions, transportation infrastructure, and local energy

policies. This analysis aims to explore how fluctuating oil prices influence consumer demand in various regions of India. Provided below is an analysis of the Gross State Domestic Product for the years 2023-24 for the highest contributing states to India's GDP percentage wise:

Rank	State	GSDP 2023-2024(Rs.Cr)	GSDP 2022-2023(Rs.Cr)	% Share GDP 2023-2024	% Share GDP 2022-2023
1	Maharashtra	₹ 40,44,251.00	₹ 36,45,884.00	13.69%	13.53%
2	Tamil Nadu	₹ 27,21,571.00	₹ 23,93,364.00	9.21%	8.88%
3	Uttar Pradesh	₹ 25,47,861.00	₹ 22,84,104.00	8.63%	8.48%
4	Karnataka	₹ 25,00,733.00	₹ 22,69,995.00	8.47%	8.42%
5	West Bengal	₹ 17,00,939.00	₹ 15,31,758.00	5.76%	5.68%

Note: Although Gujarat's contribution to India's GDP is substantial, the state has not been included in the analysis due to incomplete and missing data points. Maharashtra has the highest GSDP among the Indian States and Union Territories. As of the FY 2022-23, Maharashtra contributes 13.53% of India's GDP at current prices, followed by Tamil Nadu (8.88%) and Uttar Pradesh (8.48%). Other states in top 5 are Karnataka (8.42%) and Gujarat (8.18%). The top 5 states share 47.48% of India's total economy.

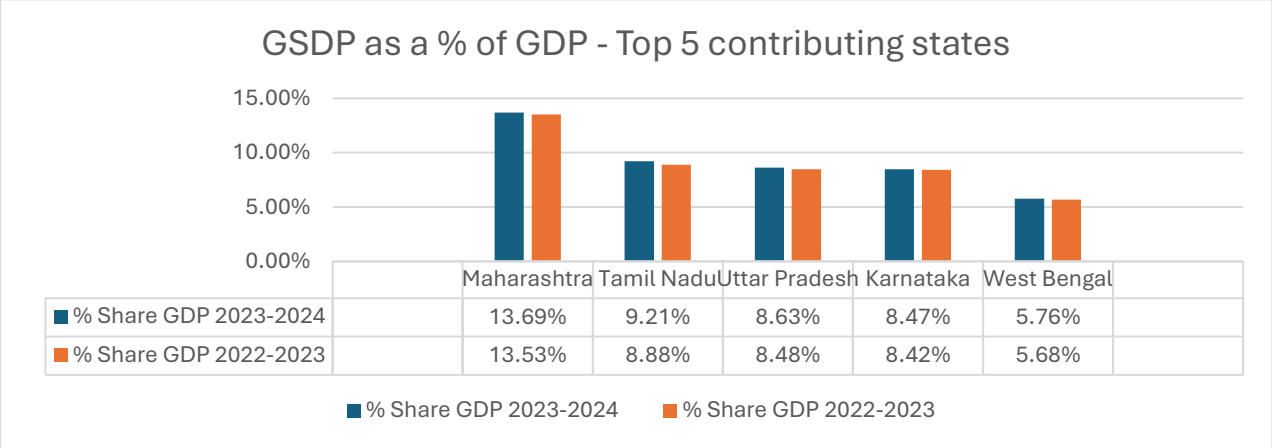

Fig 2 : Bar chart of GSDP as a % of GDP - Top 5 contributing states

Source: mospi.gov.in

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Table 2: Petrol Prices per litre of top 5 states per % GDP contribution from 2017 to 2024

State / Year	2017	2018	2019	2020	2021	2022	2023	2024
Karnataka	₹ 69.74	₹ 76.88	₹ 74.47	₹ 79.27	₹ 98.87	₹ 101.61	₹ 101.61	₹ 101.61
Tamil Nadu	₹ 70.35	₹ 78.49	₹ 74.98	₹ 79.54	₹ 96.51	₹ 102.72	₹ 102.72	₹ 102.63
West Bengal	₹ 70.54	₹ 78.15	₹ 74.54	₹ 78.71	₹ 96.65	₹ 105.76	₹ 105.76	₹ 106.03
Uttar Pradesh	₹ 70.41	₹ 76.23	₹ 72.36	₹ 77.62	₹ 93.40	₹ 96.85	₹ 96.85	₹ 96.57
Maharashtra	₹ 76.97	₹ 82.94	₹ 77.84	₹ 82.86	₹ 102.40	₹ 109.19	₹ 109.19	₹ 106.31

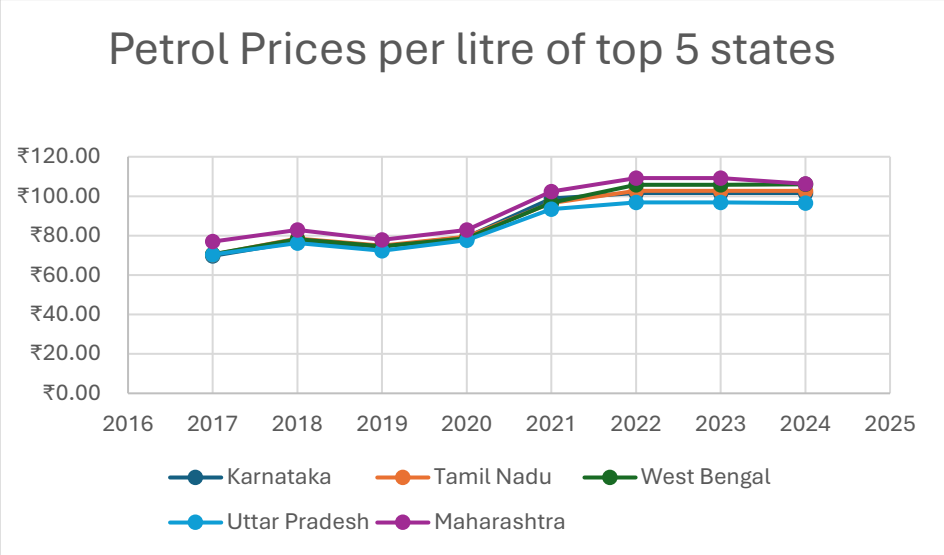

Fig 3: Trend Analysis showing Petrol prices per litre of top 5 states

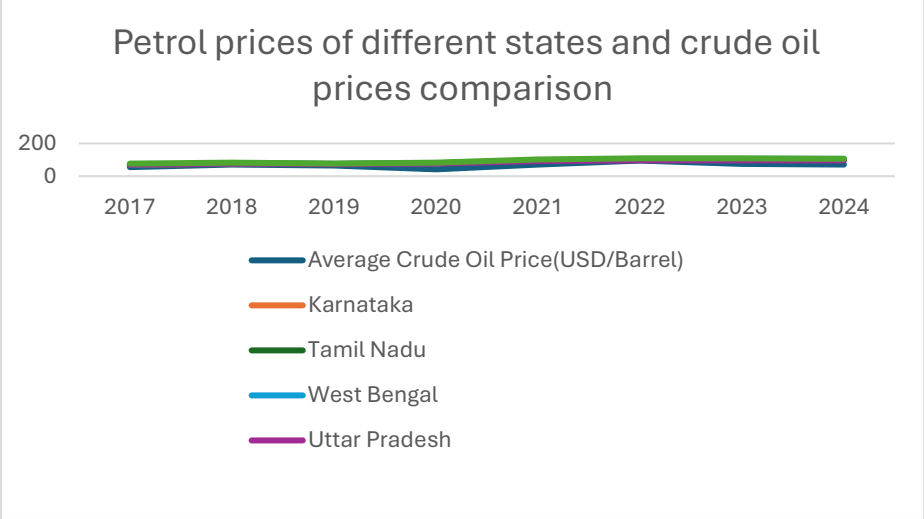

Fig 4: Comparison between petrol prices of different states and crude oil prices during 2017-2024

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Overall Trend Consistent Increase: The general trend for all states and crude oil prices is an upward trajectory from 2017 to 2024. This suggests a consistent increase in fuel prices over the period.

State-wise Analysis

Maharashtra: Maharashtra consistently shows the highest petrol prices among the listed states. This could be due to various factors like higher taxes, transportation costs, or other state-specific factors.

Uttar Pradesh: In contrast, Uttar Pradesh often has the lowest petrol prices, likely due to lower taxes or other state-specific policies.

Other States: Karnataka, Tamil Nadu, and West Bengal show similar trends, with gradual increases in petrol prices over the years.

Impact of Crude Oil Prices

***Correlation*:** There's a clear correlation between the average crude oil price and the petrol prices in the different states. When crude oil prices rise, so do petrol prices in India.

Delayed Impact: The impact of crude oil price fluctuations on domestic petrol prices may be delayed due to various factors like refining costs, transportation costs, and government policies.

Potential Factors Influencing Prices

Global Crude Oil Market Dynamics: International crude oil prices, influenced by factors like OPEC production quotas, geopolitical tensions, and economic growth, impact domestic fuel prices.

Government Policies: Government policies, such as taxes, subsidies, and import duties, can significantly influence fuel prices.

Exchange Rate Fluctuations: Changes in the exchange rate can impact the cost of imported crude oil.

Refining Margins: The profit margins of oil refineries can also affect fuel prices.

Economic Factors: Economic growth, inflation, and interest rates can influence consumer demand and fuel prices.

Table 3: Gross Value Added contribution by sector to India's GDP 2023-24

Sector	GVA in 2023-24 (Rs.Cr) Current prices	Share %
Agriculture Sector	47,25,223	17.66%
Agriculture, forestry & fishing	47,25,223	17.66%
Industry Sector	73,92,965	27.62%
Mining & quarrying	5,25,881	1.97%
Manufacturing	38,19,749	14.27%
Electricity, gas, water supply & other utility services	6,63,458	2.48%
Construction	23,83,877	8.91%
Services Sector	1,46,43,960	54.72%
Trade, hotels, transport, communication and services related to broadcasting	46,84,542	17.50%
Financial, real estate & prof servs	60,64,251	22.66%
Public Administration, defence and other services	38,95,167	14.55%
GVA at basic prices	2,67,62,147	100%

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The services sector is the largest sector of India. Gross Value Added (GVA) at current prices for the services sector is estimated at Rs.146.44 lakh crore in 2023-24. With a GVA of Rs. 73.93 lakh crore, the industry sector contributes 27.62%, while Agriculture and allied sectors share 17.66% between them.

Maharashtra, being an industrial hub, sees high consumption of diesel for transport and industries. A drop in oil prices generally leads to increased demand for diesel and gasoline, supporting transportation and logistics sectors. With a high concentration of vehicles, Delhi's demand for petrol is notably responsive to oil price changes. Lower oil prices encourage more vehicle use and spur demand for new car purchases. A 10% reduction in crude oil prices has historically resulted in a 5% increase in petrol sales. As a state with significant transportation and agricultural activities, Tamil Nadu experiences varied impacts based on oil price fluctuations. Farmers benefit from lower prices, which reduce operational costs. Increased demand for transportation fuels supports both rural and urban economies. A decrease in oil prices by 20% could lead to a 7-10% increase in diesel consumption among farmers.

Factors Influencing State Variations

States with a strong industrial base (like Maharashtra and Gujarat) show a more pronounced response in demand due to their reliance on fuel for production and logistics.

States with extensive rural areas (like Uttar Pradesh and Tamil Nadu) may experience varying demand patterns due to agricultural reliance on diesel.

State government policies, including fuel taxes and subsidies, significantly impact consumer prices and demand elasticity.

Regions with better connectivity and public transportation systems might show a different pattern in fuel consumption, especially in response to oil price changes.

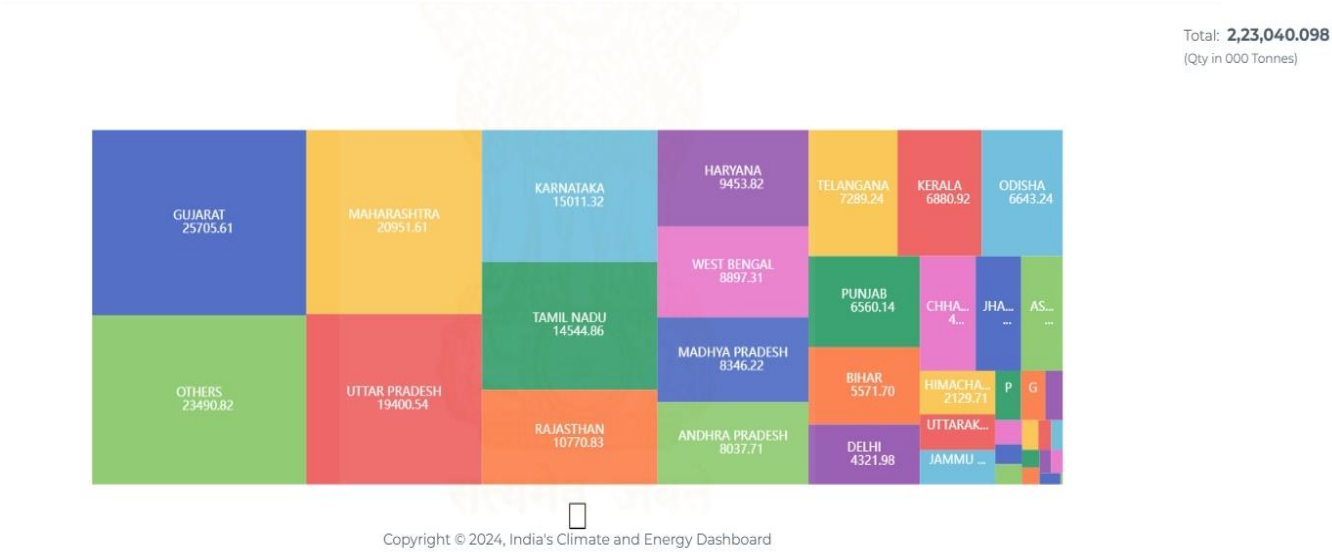

Fig. 4 : State Wise Petroleum Products Consumption

Source: https://iced.niti.gov.in/energy/fuel-sources/oil/consumption

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Conclusion

The impact of changing global crude oil prices on consumer demand in India is multifaceted, involving economic, behavioural, and sectoral dimensions. While lower oil prices generally boost consumer demand through increased disposable income and reduced costs, the effects can vary based on government policy responses and long-term consumer behaviour changes. Further research is needed to explore the long-term implications of these price fluctuations, especially concerning sustainability and energy transition in India.

GST on petrol has been a contentious issue since the implementation of the Goods and Services Tax (GST) law in India. Certain developments since 2021 have led industries across the country to believe that the GST Council may decide to charge GST on petrol and petroleum products. In the 53rd GST Council meeting press conference, the FM Smt. Nirmala Sitharaman mentioned that it is the intent of the Central Government to bring petrol and diesel under GST, however it can be made a reality only once the states agree to the move. Petrol's GST implementation in India is a current debate, with varying tax rates among states. A potential 28% GST with cess is proposed. Bringing petrol under GST promises lower prices for consumers, potentially causing a nationwide uniform rate.

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