

Rerouted, Not Resolved: A Theoretical and Distributional Analysis of the Israel–Iran War's Transmission into India's Fuel Crisis

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Research Article

Keywords: Energy resilience, oil price shock, geopolitical risk, distributive justice, energy poverty

Posted Date: October 21st, 2026

DOI: <https://doi.org/10.21203/rs.3.rs-11167728/v1>

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Additional Declarations: No competing interests reported.

Abstract

The Israel–Iran war and the near closure of the Strait of Hormuz exposed a structural weakness in India's energy security architecture: heavy dependence on a geopolitically vulnerable corridor for crude oil, natural gas, and liquefied petroleum gas (LPG). Using an interpretive, qualitative design, this paper integrates supply chain resilience theory, oil price shock theory, fuel and energy poverty theory, and energy security literature into a theoretically informed transmission framework linking geopolitical disruption to potential household exposure. The analysis shows that the shock was partly redirected from retail prices toward public finances, administered pricing, inventories, and potential household coping, with potentially disproportionate consequences for low-income, fuel-dependent households. Existing literature either explains price transmission without addressing distributional incidence, or theorizes hardship without situating it within geopolitical cause. Bridging these traditions, the paper develops a distributionally conscious model of energy security in which protecting vulnerable populations is a central analytical concern. The paper terms this the Integrated Distributionally Conscious Energy Security Framework (IDCESF), defined as a five-stage analytical framework linking geopolitical disruption, supply-chain vulnerability, price and fiscal transmission, differential household exposure, and policy adaptation.

Introduction

Energy security has conventionally been theorized as a technical and macroeconomic matter of barrels, pipelines, and price indices. The 2026 war challenges this narrow framing by showing how geopolitical conflict can expose deeper structural vulnerabilities in an energy system. The war began on 28 February 2026, and the ensuing near halt in tanker movements through the Strait produced the largest supply disruption in the history of the global oil market, according to the International Energy Agency (IEA, 2026a, 2026b). The IEA reports sharply reduced flows during March–May, while alternative routes, inventory drawdowns, and supplier switching partly offset the loss. The episode is therefore better characterized as a prolonged near-closure and severe flow restriction than as an empirically established permanent or unprecedented historical “closure.” This difference is crucial because the observations related to public throughput were limited and the flows started to recover during second quarter. Hence, it becomes evident that the current crisis shows that energy security should be considered not just by looking at the aggregate supply and the pricing, but also through the structural weaknesses that become apparent due to geopolitical shocks.

India entered the crisis already vulnerable by virtue of the country's dependence on foreign fuel sources and the critical nature of its fuel transportation through the Strait of Hormuz. In FY2025, crude oil import dependency stood at about 88 percent (Ministry of Petroleum and Natural Gas, 2024). During the crisis period, the share of the Strait for India's crude, LNG, and LPG imports stood at about 41–53 percent, 55 percent, and 88 percent respectively, which are source-based estimates and not official figures for the crisis month series (Wright Research, 2026). The asymmetry, especially LPG's estimated exposure is analytically important given the close linkage between LPG and the welfare of the household through the

Pradhan Mantri Ujjwala Yojana (PMUY). India's exposure was thus not even across fuels and the high dependence on LPG imports meant that an external geopolitical shock could have a direct impact on household energy access and welfare. This renders India vulnerable to energy security threats, not just on a national level, but also individually at the household level.

This is a puzzle further complicated by the domestic price reaction observed. The prices of petrol and diesel at retail outlets in Delhi stood at ₹94.77 and ₹87.67 per litre, respectively, in February 2026, according to PPAC, while ICRIER recorded that prices of petrol and diesel remained largely unchanged from January despite the oil price spike. The price of domestic LPG cylinder of 14.2 kg in Delhi rose by ₹60 from 7 March 2026 and the price of commercial LPG cylinder of 19 kg increased by ₹183 from the same date (Petroleum Planning & Analysis Cell [PPAC], 2026; Gupta & Tiwary, 2026; Lok Sabha Secretariat, 2026). ICRIER's annualized fiscal cost estimate of keeping petrol and diesel prices low is approximately 0.58 per cent of GDP. It is an estimate based on a model, with an increase in the crude price of 50 per cent, a rise in petrol and diesel supply cost of 25 per cent and projected 2026 consumption—all of which is not an ex post fiscal incidence of the whole crisis. LPG and natural-gas subsidies are dealt with separately at approximately 0.20 per cent of GDP (Gupta & Tiwary, 2026). The shock was thus not evenly distributed amongst the price controls, fiscal absorption, inventories and, perhaps unmet or deferred demand, as suggested by the three sources referenced above: PPAC (2026), Gupta and Tiwary (2026) and Lok Sabha Secretariat (2026). The critical analytical issue then is the distribution of these disrupting costs between the state, the consumer, inventories, and the overall economy.

This transmission mechanism reveals a gap in existing scholarship on India's energy-security vulnerabilities. Macroeconomic pass-through studies on India (Mandal et al., 2012; Anand, 2016; Pradeep, 2022) are rigorous on price dynamics but largely silent on distributional incidence, while fuel-poverty theory (Boardman, 1991) was developed for housing-heating contexts rather than the cash-constrained, cylinder-refill economy of Indian household energy consumption. The gap is therefore not the absence of studies on energy prices or energy poverty, but the absence of an integrated account connecting geopolitical supply disruption, price transmission, fiscal absorption, and household vulnerability in India. This study addresses that gap by tracing the crisis as a connected analytical transmission chain from Strait disruption to supply, price transmission, differentiated household exposure, and structural policy response.

Methodology

This study adopts an interpretive qualitative research design that combines qualitative document analysis (QDA) with critical documentary analysis to trace how the 2026 Israel–Iran conflict and the severe disruption of the Strait of Hormuz were transmitted through India's fuel-supply system and to identify the potential distributional pathways through which the disruption could affect energy-vulnerable households. The study does not claim to estimate causal, population-level welfare effects because nationally representative crisis-period household expenditure and refill microdata are not included in the

documentary corpus. Documents were identified through structured searches of Government of India and institutional websites and academic databases, including Scopus, Web of Science, JSTOR, and Google Scholar, with searches conducted during manuscript preparation in 2026. Search terms included “Israel–Iran war 2026,” “Strait of Hormuz disruption,” “India energy security,” “India oil import dependence,” “oil price shock India,” “supply chain resilience energy,” “4 A’s energy security,” “fuel poverty India,” “LPG affordability India,” and “Pradhan Mantri Ujjwala Yojana.” The documentary corpus covers sources published between 1999 and 2026, with crisis-specific sources concentrated in 2024–2026, while foundational theoretical and empirical studies were retained where directly relevant to the analytical framework. The screening process comprised three stages: title and source screening for relevance, full-text screening against the inclusion criteria, and final thematic eligibility screening. The inclusion criteria required documents to address the 2026 energy disruption directly, India’s energy security and fuel-supply vulnerability, oil-price transmission and fiscal responses, household energy affordability and fuel poverty, or a theoretical concept directly used in the analysis. Official government policies and statistics, parliamentary documents, International Energy Agency assessments, publications from international agencies, policy institute reports, financial and market research, and scholarly research articles were eligible, whereas opinion articles, blogs, duplicates, and texts without substantive relevance to the research question were excluded. Following screening and relevance assessment, 55 cited documents were retained. Consistent with Supplementary Appendix A, 24 documents constitute the major/core analytical corpus and 31 constitute the supporting corpus. Core analytical documents are those providing direct source material concerning the 2026 disruption, Indian supply exposure, fuel availability, retail-price changes, fiscal intervention, inventory responses, or household-energy conditions, whereas supporting documents are used primarily for theoretical, historical, contextual, methodological, or supplementary interpretation. This distinction is based on evidentiary function rather than perceived source quality. The complete corpus is reported in Supplementary Appendix A, with the year, source or publisher, document type, and reason for citation stated for each document. The analysis also distinguishes evidentiary weight across source types. Official Government of India, parliamentary, Petroleum Planning and Analysis Cell (PPAC), Ministry of Petroleum and Natural Gas, International Energy Agency, and peer-reviewed sources are prioritized for factual chronology and quantitative claims, while institutional and policy research is used primarily for contextual and analytical material. Preprints, analyst reports, and media sources are treated as supporting sources unless independently corroborated. This hierarchy is intended to prevent provisional or model-based estimates from carrying the same source weight as official or peer-reviewed material. Because database interfaces and web repositories are dynamic, the study does not treat a fixed database hit count as a substantive finding; instead, reproducibility is supported through the stated databases, search terms, eligibility criteria, screening stages, final corpus, and core/supporting classification. The core documents were examined through multistage thematic analysis involving repeated reading, open coding, categorization, theme development, and theoretical interpretation. The analysis was conducted in the fields of maritime dependence, disruption of supply, sourcing alternatives, inventories, fuel price effects, fiscal interventions, household affordability, fuel dependence and adaptive responses. Recurring patterns were identified in the documentary material through coding and then by

thematic interpretation, and finally, the integrated theoretical framework was used to interpret the significance to the topics of resilience, energy security, price transmission, affordability, vulnerability, and policy adaptation. The central analytical chain is composed of five linked steps: geopolitical shock, vulnerability of the supply chain, price and fiscal transmission, differential exposure of households, and policy adaptation. Reflexivity of the researcher was addressed by reflecting on how analytical assumptions might affect the choices of sources, coding and interpretation, especially when there is a lack of information or provisional estimates from the period of a crisis. Triangulation was conducted by cross-checking information from government sources, parliamentary documents, assessments by international organizations, policy institute estimates, financial and market research, and academic literature. The analysis therefore distinguishes between directly observed price and policy changes, source-anchored estimates, and illustrative incidence calculations. Illustrative household-group mappings are treated as theory-informed mechanisms rather than measured FY2026 outcomes, while model-based fiscal estimates are reported as estimates under stated assumptions rather than as ex post fiscal outturns.

Review of Literature

The supply-chain resilience literature provides the first theoretical basis for understanding India's exposure to the 2026 energy shock, but its firm-level origins limit its explanatory reach in a sovereign energy system. Christopher and Peck (2004) describe vulnerability as a property of the system of interconnected networks and note that resilience is not a function of a network's nodes, but of its redundancy, visibility, velocity and collaboration. The framework is especially applicable to the Indian energy architecture with its high import dependency, focused energy imports from the Gulf and dependence on the Strait of Hormuz as one of the world's "Maritime Chokepoints". Based on this logic, further studies on the COVID-19 "ripple effect" have been conducted, which continue to involve cascading disruptions and proactive adaptation (Ivanov & Das, 2020; Ivanov & Dolgui, 2021; Ivanov, 2024). Papachou et al. (2023) develop structural measures of source dependence, cascading failures, and intervention opportunities, whereas Sanabria (2026) extends stochastic network analysis to cover inventory depletion, capacity constraints, price feedback dynamics, and trading equilibrium. However, these methodologies fail to fully capture the impact of sovereign energy systems on the vulnerabilities of networks through strategic reserves, government actions, government-induced barriers, and financial policies. This is partially overcome by Sharma and Lau (2026), who develop a stochastic multi-commodity model of the maritime energy network for India, and find that LPG is especially vulnerable given that it also has lowest substitution potential of the commodities. The contribution of the present study to theory is therefore to broaden the concept of supply-chain resilience from the level of the individual firm to include the capacity of the state, policy intervention, and the different degrees of fuel dependence as processes through which geopolitical vulnerability becomes economic exposure. This reorientation links network resilience to institutional governance of energy security, rather than looking at the issue of energy disruption as only a logistics issue.

The second phase of this transmission is the oil-shock theory but it is a macroeconomic concept. Hamilton (1983, 2003) has recognized the importance and nonlinearity of oil-price shocks and Kilian (2009) has separated supply shocks, aggregate-demand shocks, and precautionary-demand shocks. The 2026 disruption is analytically more comparable to a supply-side shock since it resulted from a physical chokepoint constraint, while geopolitical risk serves as another lens to interpret uncertainty about the shock (Caldara & Iacoviello, 2022). The pass-through effects of domestic prices to international oil price movements are found to be asym-metrically in Indian pass-through studies since the introduction of the price deregulation and later price changes (Mandal et al., 2012; Anand, 2016; Pradeep, 2022). However, much of this literature has assessed the impact of transmission via aggregate measures of prices and thus consumer is considered as a homogeneous group. It therefore sheds light on the transmission pathways of an oil shock to domestic prices and fiscal accounts better than the transmission pathways of an oil shock to domestic prices and fiscal accounts through policy. In addition to the theoretical contribution, the present study applies a documentary contribution that breaks down the transmission mechanism between the various components of the transmission channel: supply disruption, route substitution, inventories, retail pricing, fiscal absorption and fuel dependence at the household level, instead of using the international oil price as the sole transmission variable. This can be done to explore the impact of implementing a price stability policy by state on the "pass-through" dynamics and the incidence of an external supply shock on the various parts of the energy system.

Energy Security and the “4 A’s” Framework

There is a larger conceptual context for linking energy supply, economic access, and institutional aspects of energy systems in the energy-security literature. The concept of energy security, as is commonly summarized in the “4 A's” (availability, accessibility, affordability, and acceptability) is generally defined by the energy supply's availability, affordability, technology development, sustainability, and regulation; this is not a comprehensive summary of the 4 A's, but serves as an analytical framework that can be applied to energy security. These energy security dimensions are also shown to be useful in Asian contexts for comparative applications in various national contexts (Sovacool et al., 2011; Amin et al., 2022). Of particular relevance is the distinction between availability and affordability, as made by Sovacool (2012), where India was facing two simultaneous crises in 2026. This framework thus extends the above analysis of the supply-chain and oil-price mechanisms and enables the investigation of other questions, such as whether or not energy is physically available, economically accessible and still affordable in the event of geopolitical disruption. Theoretically the paper supports this study by introducing a multidimensional definition of energy security to which the impact of the crisis can be mapped in terms of energy supply, price, and access and policy responses.

But, the 4 A's analytical framework also has a significant drawback. Cherp and Jewell (2014) state that current energy-security policies fail to address three basic issues security for whom, security of what or what values, and security from what or what threats. This may mask significant intra-national variations in exposure at the household level by treating the nation-state as a one-size-fits-all solution, and by

focusing on affordability as an aggregate national indicator. This restriction is further strengthened by the energy-justice literature, which focuses mainly on dimensions of distribution, recognition, participation and procedural aspects of energy systems, but has been applied mostly to issues such as siting of energy infrastructure and transition to renewable, rather than to acute disruptions of the supply of fossil fuels (Sovacool & Dworkin, 2015; Heffron & McCauley, 2014, 2017; Jenkins et al., 2016). These perspectives can be linked by vulnerability conceptualization developed by Adger (2006) who synthesized vulnerability literature as vulnerability being the susceptibility to harm from the interplay between exposure to stress and adaptive capacity. This view would allow for the interpretation that the state's role, fiscal protection, fuel substitution, and other coping strategies are not external reactions to the crisis, but part and parcel of the energy-security vulnerability. The framework thus adds a dimension of distribution and adaptation that is essential to transition from national energy security towards differentiated household exposures. The concept of fuel-poverty research has been developed to address this distributional dimension but has been used in the traditional sense which needs to be adapted to the India context of cooking fuel. Fuel poverty was conceptualized by Boardman (1991) as a result of the interactions between income, energy prices and the efficiency of the capital stock and subsequently by the multidisciplinary and capability-based approaches which focused on energy services that households are able to actually attain (Moore, 2012; Nussbaumer et al., 2012; Day et al., 2016). A range of studies shows that energy access is not solely a function of income: PMUY has resulted in measurable, though modest, increase in LPG consumption and has observed significant regional differences (Asharaf & Tol, 2024); fuel-stacking has been related to a spatial and socio-cultural heterogeneity (Neto-Bradley et al., 2021); and price, accessibility and cooking practices are barriers to sustained LPG uptake (Angoori & Kumar, 2025). The CEEW ACCESS (2015) and the India Residential Energy Survey, but neither of these identifies the household impacts of the 2026 shock. Likewise, Zhang et al. (2026) show that a common fuel shock generates un-homogeneous behavioural responses based on the baseline mobility and adaptive capacity, but they do not prove the India-wide welfare effect. This documentary contribution of this study is to develop a source-triangulated account of the 2026 crisis separating observed price and policy changes from the source-anchored account and illustrative scenarios of household incidence. Instead of asserting measured impacts for FY2026 household effects that these data can't tell us, the study identifies the mechanism(s) by which LPG dependence, price pass-through, fiscal shielding, and fuel-stacking might affect differentiated exposure.

A gap in theory and practice is noted from the literature. Theory of supply-chain resilience, distributional incidence and adaptive capacity of a supply chain doesn't provide enough detail on resulting price or distributional outcomes, theory of oil-shocks explains price dynamics, but in its applications to India, it has been limited to treatment of distributional incidence, theory of fuel-poverty explains differentiated exposure of households to fuel price, but doesn't have a sufficiently rich vocabulary to trace geopolitical shocks through national energy systems, and 4 A's is a framework that combines physical availability, availability, accessibility, affordability and acceptability, and is generally more focused on energy security at the aggregate level rather than disaggregating it across income groups and household capacities. Of the scholarship evaluated, there is little evidence of a single analytical combination of these four

traditions in a developing country with a highly dependent energy supply that is experiencing a major energy-supply shock as a result of conflict. The current study fills this gap, by developing a network-vulnerability, oil-price transmission, multi-dimensional energy-security, and household energy-vulnerability connected analytical chain from geopolitical disruption and maritime dependence to supply constraints, market and fiscal transmission, differentiated house-hold exposure and structural policy response. In this way its contribution is not theoretical or empirical but a connecting contribution that connects the explanatory domains of the different frameworks without making things up in the 2026 context of India for the moment where the impact of the household cannot be measured.

The novelty of the present study lies not so much in the originality of the generated standalone theory, but in the integration of an analytical framework, linking the domains of explanations that are normally addressed separately. The framework integrates the concepts of supply-chain resilience, oil-shock theory, multidimensional energy security and fuel-poverty/vulnerability studies in a single five-stage transmission pathway: geopolitical disruption, vulnerability of the supply-chain, price and fiscal transmission, differential household exposure, and policy adaptation. Supply-chain resilience theory helps to understand how geopolitical disruption can make networks vulnerable, and why relying on concentrated maritime supply routes can increase vulnerability, but it does not answer the questions of how vulnerability is passed on to domestic prices, fiscal absorption, or differentiated household vulnerability. Oil-shock theory can explain how external shock translates into oil prices, the difference between supply-side and demand-side impacts, and is useful for distinguishing among the effects of the oil shock on various household groups; however, it falls short in addressing this issue. Fuel-poverty and vulnerability research highlights the need to understand how the level of income, fuel consumption and adaptive capacity of a household could affect the impact of the same energy shock, but this doesn't offer enough detail to trace the effects of the energy shock back to geopolitical and supply-chain disruptions.

The 4 A's framework captures the dimensions of availability, accessibility, affordability and acceptability of energy security, but it does not constitute a pathway or pathway system of how an external geopolitical shock would travel through external supply chains, markets, fiscal policy and differentiated exposure at the household level. The energy-justice scholarship also offers a distributional and procedural focus for evaluating who is insulated, who is vulnerable, and who is being covered by energy policy. The proposed framework, therefore, provides an analytical value by connecting these different layers of explanation into a single shock transmission model for India. It is the representation of how a geopolitical disruption can be transmitted from external reliance on sea transport to the vulnerability of supply chains and markets to the exposure of various types of households to these various shocks and policy responses that makes it a central contribution. It also allows to distinguish the 2026 data on oil prices from the IEA's Oil Market Report March 2026 (IEA, 2026a), the price record of the PPAC and that of the Lok Sabha Secretariat for LPG prices (PPAC, 2026 and 2026), respectively, from the source-anchored estimates and illustrative mechanisms of occurrence through exposure of households. The framework does not replace existing theories but it outlines the possibilities for linking the explanatory domain of these theories to address an import-dependent developing economy in the grip of an acute energy shock

caused by a conflict. This integrated framework also serves as an underpinning to outlining testable mechanisms and policy responses that are not evident in any single theoretical approach.

Theoretical Contribution and Analytical Synthesis

The core theoretical contribution of this study is the working out of a combined analytical chain from four streams of literature that have sprung and evolved independently. The crux of the study lies in the integration of four streams of literature, which have evolved largely in isolation, into an integrated analytical chain, calibrated to the import architecture and household energy-consumption pattern in India. The synthesis links network vulnerability (Christopher & Peck, 2004), price transmission (Hamilton, 1983, 2003; Kilian, 2009; Mandal et al., 2012; Anand, 2016; Pradeep, 2022), fiscal absorption and household-level burden (Boardman, 1991, re-specified for LPG-refill affordability), and lastly a policy response organized by 4 A's but subject to Justice Scrutiny. This reflects the equity-poor nature of the macroeconomic tradition and the geopolitically poor nature of fuel poverty theory, that is, restricted to the Global North, and extends it to the household level as suggested by Cherp and Jewell (2014) with their "security for whom" critique. The study contributes to the literature in 3 ways. Theoretically, re-specifying Boardman's (1991) income-price-capital-stock model around LPG-refill affordability gives me a model that is readily applicable to other cash-based energy economies, and tells me apart from substituting risk and from eliminating risk. Theoretically, it links the geopolitical disruption, price transmission, fiscal absorption, and potential household burden to one analytical chain methodologically. In an analytical sense, it adds a clear incidence identity calculation and sensitivity analysis in a manner which aligns with ICRIER's stated pass-through assumption as opposed to providing a chart to illustrate quintiles as data. On a practical level, it establishes three policy instruments for testing targeted PMUY relief, reserve-access clauses, and high-frequency refill monitoring. This integrated analytical chain is termed the Integrated Distributionally Conscious Energy Security Framework (IDCESF), comprising five linked stages: geopolitical disruption, supply-chain vulnerability, price and fiscal transmission, differential household exposure, and policy adaptation.

Result and Discussion

Conceptual Framework

The analytical transmission chain is presented in Fig. 1 and is based on the synthesis above. The initial geopolitical shock affects the import route network: supply chain resiliency theory means that the disruption of an import route network, thousands of kilometers from where it is used, can generate immediate scarcity risk in an economy where 88.2 per cent of imports are dependent. The disruption of the network is then reflected as a price signal and the theory of oil price shocks explains the mechanism of the transmission and crucially where this analysis sees a re-direction of the shock from the retail price channel to the fiscal channel. Whatever the overall gain or loss in price, the price signal can have uneven impacts on households, as fuel/energy poverty theory suggests, and this is important to consider for

why the same percentage rise could have a larger welfare impact for those at the bottom of the income distribution who are likely to be more reliant on LPG. Finally, accumulated pressure from the network, price and household layers is passed to the structural policy response, where the 4 A's framework structures analysis of diversification, reserves and subsidy policy, which is assessed not only for availability and affordability at the national level, but also with regard to who benefits and who bears the burden. The model therefore integrates geopolitical exposure, supply-chain disruption, price transmission, fiscal absorption, household vulnerability and policy adaptation into one analytical chain, and acknowledges that policy responses can then impact the future resilience and geopolitical exposure of the system. This analytical transmission chain constitutes the Integrated Distributionally Conscious Energy Security Framework (IDCESF).

The cited literature supports interpreting Fig. 1 as a connected transmission pathway in which supply-chain vulnerability, oil-price transmission, household fuel vulnerability, and multidimensional energy security are analytically linked rather than treated as separate effects (Christopher & Peck, 2004; Kilian, 2009; Boardman, 1991; Sovacool et al., 2011). The Integrated Distributionally Conscious Energy Security Framework (IDCESF) analysis is shown in Fig. 1, beginning with the geopolitical disruption, followed by the passage of the vulnerability of the supply chain, the price and fiscal transmission, the differential exposure of the households, and finally the policy response. A feedback loop for policy adaptation to geopolitical preparedness and future shocks is also included in the framework. The dashed feedback loop is the limitation of linear approaches to an analysis of the effects of energy shocks: Once a significant shock is felt by prices, supply conditions, households and public finances, its impact does not simply go away after prices have adjusted. Instead, it is experience with the shock that influences subsequent preparedness, reserve-capacity planning, diversification, subsidy and targeted-support measures, and a broader energy-security policy. These responses, in turn, influence the circumstances in which future shocks are absorbed and managed. The study considers this feedback mechanism in its analysis of India's post-crisis reserve, diversification and preparedness decisions.

Supply Chain Disruption

This is a structural precondition of the crisis, as India became more and more dependent on crude oil imports, increasing from 83.8 per cent in FY2019 to 88.2 per cent in FY2025, directly contradicting the 2015 policy target of reducing dependency to 67 per cent by FY2022 (Ministry of Petroleum and Natural Gas, 2024), as shown in Fig. 2 below. The dependency on natural gas increased even more during the last year of the series, from 47.1 to 50.8 per cent. From the perspective of Christopher and Peck (2004), it is not just about increased cost exposure; each incremental percentage of import reliance corresponds to a gradual diminishing of network redundancy the amount of production at home that can absorb any outside shocks.

The baseline was disrupted by the Strait of Hormuz, resulting in product-specific exposure across India's energy import system. Figure 3 shows analyst estimates that 41 per cent of India's crude oil imports over the first nine months of FY2026 were routed through the Strait, rising to 53 per cent at the January 2026 peak. It also shows that 55 per cent of LNG imports and 88 per cent of LPG imports were routed

through the Strait over the same nine-month period (Wright Research, 2026), as shown in Fig. 3. These figures are analyst estimates rather than final PPAC statements and should therefore be interpreted as estimates of exposure rather than official final import statistics. The resilience definition in the background is aligned with the independent network-modelling work of Sharma and Lau (2026), which identifies LPG as the most exposed commodity in India's maritime energy network.

The imbalance of crude exposure (41–53 per cent) and LPG exposure (88 per cent) is an analytically important feature of the episode (Fig. 3). The crisis has been discussed primarily in terms of crude oil and the macroeconomic import bill, and LPG has been regarded as an insignificant sub-group of the petroleum basket. However, LPG's value chain ends at the kitchens of the PMUY-beneficiary households whose consumption of LPG is also reactive to marginal price and availability changes in normal times (Ranjan & Singh, 2020; Angoori & Kumar, 2025). An 88 per cent exposure to the Hormuz route translates to a relatively low alternative-route buffer that the chokepoint closed with compared to the crude figure, on Christopher and Peck's (2004) redundancy criterion, on the basis of which the alternative-route buffer margin would have been far thicker. Global coal trade has been remarkably resilient in the face of maritime chokepoint disruption, and rerouting and supplier-switching can hold costs in check to \$0.5 per tonne in most scenarios (Gosens, Turnbull, & Jotzo, 2026), warning against extrapolating this resilience uniformly across fuel classes and suggesting that LPG's thinner and less substitutable supply chain be treated separately from crude.

The rerouting response is shown in Fig. 4. Russian crude and long-haul supplies from the U.S. Gulf Coast and West Africa helped fill the supply gap during the crisis. However, these alternatives cannot eliminate geopolitical exposure. Russian-origin supplies carry sanctions and policy risks, while longer hauls may increase freight, insurance, and delivery costs (Sahai, 2026). Resilience can therefore be achieved partly through higher landed costs and supplier diversification rather than through the elimination of risk. India's Strategic Petroleum Reserve (SPR) provides an additional short-term buffer, but its capacity remains limited relative to national import requirements. Argus estimates existing SPR capacity at around 39 million barrels across two sites, equivalent to approximately 9.5 days of demand, while Phase II plans include 4 million tonnes at Chandikhole and 2.5 million tonnes at Padur (Argus Media, 2026). Carnegie India similarly identifies limited reserves as a structural constraint. For comparison, the IEA recommends a 90-day stockholding requirement, although this requirement is not currently binding on India because of its associate-member status. Figure 4 therefore illustrates that a disruption or closure of the Strait of Hormuz would require India to shift from the normal Gulf–India supply route towards alternative suppliers and longer transport corridors. The resulting resilience would depend not only on supplier diversification but also on adequate storage capacity and the ability to absorb higher logistics and landed costs.

This brings to light an asymmetry that is not intrinsic to a firm-level resilience theory: a sovereign reserve is a buffer against domestic disruption as well as a commercial asset. According to Argus, 50 per cent of the current capacity is being earmarked for commercialization and ADNOC has a portion of Mangalore capacity available with re-export rights (Argus Media, 2026). The issue of government access is thus

contractual and no longer whether commercialization is bad in itself, but whether new leasing terms ensure access to the building immediately in the event of an emergency. Another aspect that might be theorized is that of retail-level hoarding and informal diversion. When the administered price is lower than the shadow price, there is an incentive for arbitrage. The record, however, for 2026 should be confined to the following: the Ministry of Petroleum and Natural Gas (MoPNG, 2026a) put in place measures for prioritizing domestic LPG production and supply under the Essential Commodities Act, and contemporary reporting included panic booking and hoarding concerns. The March order instructed refiners to produce LPG in maximum quantity and also mandated the public sector OMCs to allocate LPG procured to consumers in the domestic market (Ministry of Petroleum and Natural Gas, 2026a). These measures are based on supply-management intervention, not on the size of the diversion. Transaction-level diversion data are not available, and diversion is considered a mechanism for diversion rather than an outcome.

Fuel Price Transmission and Its Concealment

The 2026 episode is more of a supply-disruption shock, in Kilian's (2009) typology. According to the IEA (2026a) Oil Market Report March 2026, the tanker movement slowed near to a standstill and large-scale curtailments in oil production took place since 28 February. The domestic reaction to the crisis was mixed, as seen from the price of petrol and diesel around the time of the onset of the crisis (PPAC, 2026) and LPG prices in March (PPAC, 2026; Lok Sabha Secretariat, 2026). In the paper, it is therefore avoided to use a single three-per cent retail figure and instead pass-through to the product is considered to be mediated by taxation, subsidies, OMC pricing and supply-management policy. A minimal accounting identity aids in understanding the distribution of the external cost. Total external cost can be interpreted as the change in retail prices paid by consumers, fiscal absorption by the government, inventory/stock drawdown and unmet or deferred demand. The first component reflects the direct contact of the consumer with the price of the goods and the remaining components reflect costs which are covered by government intervention, existing stocks, and quantities which are not supplied or can be delayed in consumption. ICRIER assumes that prices of crude oil increase by 50 per cent, which leads to an increase in supply costs by 25 per cent and estimates the annualized fiscal cost at about 0.58 per cent of GDP (Gupta & Tiwary, 2026). A sensitivity analysis of the fiscal cost around this assumption showed a fiscal cost of around 0.46 per cent of GDP for the case where supply costs increased by 20 per cent and around 0.70 per cent for the case where supply costs increased by 30 per cent. These sensitivity values are estimates and should not be taken as independent fiscal estimates, since they are based on the ICRIER assumptions. Until expenditure and LPG refill microdata is available, the distribution of the crisis burden among households is not measured.

Table 1
Fiscal Absorption of the 2025–2026 Oil Price Shock in India

Indicator	Estimate / Finding	Source
Petrol/diesel retail price, Delhi, February 2026	₹94.77 / ₹87.67 per litre; broadly unchanged in early crisis	PPAC (2026); Gupta & Tiwary (2026)
Domestic LPG price change	+₹60 per 14.2-kg cylinder from 7 March 2026	Lok Sabha Secretariat (2026)
Estimated annual fiscal cost of shielding petrol/diesel	= 0.58% of GDP ($\approx$ US\$28 billion), model-based	Gupta & Tiwary (2026)
ICRIER sensitivity: 20% supply-cost increase	= 0.46% of GDP; mechanical scaling	Authors' calculation from Gupta & Tiwary (2026)
ICRIER sensitivity: 30% supply-cost increase	= 0.70% of GDP; mechanical scaling	Authors' calculation from Gupta & Tiwary (2026)
Additional LPG/natural-gas subsidy burden	= 0.20% of GDP, treated separately	Gupta & Tiwary (2026)
Diesel pass-through evidence	Historical Indian evidence of asymmetric adjustment	Pradeep (2022)

Sources: Gupta and Tiwary (2026), PPAC (2026), Lok Sabha Secretariat (2026), and Pradeep (2022). The fiscal estimate is modeled, annualized, and applies to petrol and diesel; it is not an ex post measure of the total crisis cost.

As summarized in Table 1, the evidence indicates that the initial transmission of the 2026 oil-price shock to Indian consumers was uneven. Petrol and diesel retail prices in Delhi remained unchanged at ₹94.77 and ₹87.67 per litre during February 2026, while the price of a 14.2-kg domestic LPG cylinder increased by ₹60 from 7 March 2026. At the same time, Gupta and Tiwary (2026) estimate that government measures to shield consumers and producers from higher international fuel prices could entail an annual fiscal cost of approximately US\$28 billion, equivalent to 0.58% of GDP. Their estimate indicates that part of the external energy-price shock was absorbed through the fiscal system rather than being transmitted immediately and proportionately to retail fuel prices. The historical evidence on diesel-price pass-through further supports interpreting domestic transmission as mediated by pricing reforms and policy arrangements rather than as a simple one-to-one response to international oil-price movements. Pradeep (2022) finds that changes in diesel-price regulation affected the degree and asymmetry of oil-price transmission in India, with the post-reform period showing faster transmission of positive oil-price shocks and persistent differences between price increases and decreases.

Pradeep's (2022) finding that post-2013 was asymmetric as prices changed more quickly and fully when there was an increase in international prices than when there was a decrease, even though price deregulation reduced the pass-through effect. This suggests that the price shielding withdrawal effect be slower than the effect of a subsequent drop in global crude prices, given that the time behind the price and fiscal data (PPAC, 2026) are not available. This is further confirmed by Anand's (2016) criticism of

administered pricing: retained or delayed pass through, be it in the short-run in a country's interests, may result in lessening the effectiveness of prices, leading to inefficient consumption, and disproportionately favoring higher income households, who consume more fuel in absolute terms, but suffer the lowest effects of a price rise. The pricing of LPG works within a different regime altogether. As per the Ministry, the price of LPG is indexed against the Saudi Contract Price, and the domestic LPG pricing is somewhat protected from the price volatility due to the modulated prices by the government (Ministry of Petroleum and Natural Gas, 2026). The increase in price witnessed in March 2026, reported by the Lok Sabha Secretariat (2026), is a testimony to the partial pass-through: while the domestic 14.2-kg cylinder price went up by ₹60, those subsidized through PMUY continued to benefit from the ₹300 subsidy target and hence, their effective price became ₹613 (Lok Sabha Secretariat, 2026). The Ministry of Petroleum and Natural Gas (2026), and the Lok Sabha Secretariat (2026) therefore support a mixed mechanism partial consumer pass-through plus continued fiscal support rather than a claim that administrative pricing simply postponed all cost pressure. There is an equivalent of the previously described retail hoarding process from a price theory perspective, but the evidence for demand management intervention in the case of Ministry of Petroleum and Natural Gas supply order (2026) and recent Indian Express news reports (2026) appears to be stronger compared to quantified diversion. The panic booking stories were clarified with the statement that the government's official booking standards were 25 days in urban areas and 45 days in rural areas, while the March supply order emphasized domestic LPG production and supply (Ministry of Petroleum and Natural Gas, 2026; Indian Express, 2026). These measures do not quantify black-market diversion. The paper therefore retains the mechanism as a proposition for future testing rather than a demonstrated magnitude.

Socio-Economic Impact on Marginalized Populations

The scaffolding for this section is based on Boardman's (1991) tripartite decomposition, with an additional step to replace the heating-efficiency variable with refill affordability for LPG. The constraint for PMUY households is the need to afford a refill at the desired frequency. The impact on LPG consumption is modest, as demonstrated by Asharaf and Tol (2024), and multiple cooking fuels continue to be used as shown by IRES (Mani et al., 2021). The paper thus does not consider reversion or fuel stacking to be a rational effect of the 2026 price shock, but rather a potential coping mechanism. Price, access and cooking habits are cited as hurdles to wide-spread LPG use (Angoori and Kumar 2025) and fuel stacking remains a challenge (IRES 2025). The home cylinder's price increased by ₹60, and the targeted subsidy was continued to the beneficiaries of PMUY for the 2026 crisis (Lok Sabha Secretariat, 2026). The paper does not assert that this rise resulted in a measurable reversion to biomass, and it does not claim that the mechanism was the cause; it only points out the mechanism and specifies what data is required to test the mechanism.

Any reversion would have repercussions for public health. In Vital Strategies' modeled scenario, full transition to LPG for PMUY and households without LPG access would prevent over 110,000 deaths per year. This is not a prediction of the number of deaths that results from the 2026 shock. It reflects the opportunity cost of health implications of the forfeited sustained use of clean cooking. In addition to

LPG-dependent households, petrol and diesel are detrimental to the lives of transport workers who are considered informal in the city who depend on petrol or diesel for their livelihood. In India, gasoline and high speed diesel demand have been found to be relatively inelastic in the short-run by Ramanathan (1999) and Ghosh (2010), respectively. In the recent paper, Zhang et al. (2026) report from a natural experiment on the 2026 oil shock, highlighting a differential adjustment in mobility by neighbourhood, with greater mobility declines in areas with higher pre-shock mobility and car dependence. This bears on a mechanism of differential transmission as opposed to a measured income-group welfare impact across India

This is complicated by geographic heterogeneity. The CEEW ACCESS survey (2015) specifically focused on six states that have the lowest LPG penetration and highest number of PMUY eligible below poverty line families - Bihar, Jharkhand, Madhya Pradesh, Odisha, Uttar Pradesh and West Bengal. While the total socio-economic impact of the shock to Boardman's affordability line in 2025–2026 may fall evenly across the nation in terms of households, this may mask some variation at the state level. A synthesis of the possible variations in exposure and coping among household positions is shown in Fig. 5. Not a Primary-data estimate. The paper does not attempt to quantify it as a regression or micro simulation as it does not include household expenditure microdata and OMC refill microdata for FY2026. The above accounting framework is the structure for the quantitative data that will be populated by future microdata.

Figure 5 presents an illustrative synthesis of how exposure and coping may vary by household position. It is not a primary-data estimate. The paper treats it as a conceptual mapping rather than a quantified regression or micro simulation because FY2026 household expenditure microdata and OMC refill microdata are not incorporated. The accounting framework above provides the quantitative structure that future microdata can populate.

Table 2

Illustrative Mapping of Exposure Channel and Coping Mechanism by Household Income Group

Income Group	Principal Exposure Channel	Likely Coping Mechanism	Supporting Literature
Lowest quintile (PMUY-dependent, rural/peri-urban)	LPG refill affordability	Fuel-stacking; possible delayed or reduced refills	Boardman (1991); Asharaf & Tol (2024); Angoori & Kumar (2025)
Lower-middle quintile (informal urban transport workers)	Petrol/diesel cost per km	Reduced non-fuel consumption or activity adjustment	Ramanathan (1999); Ghosh (2010); Zhang et al. (2026)
Middle quintile	Mixed petrol/diesel/LPG	Partial demand adjustment; reduced discretionary spending	Anand (2016); Mani et al. (2021)
Upper-middle and top quintile	Private-vehicle fuel cost	Larger absolute benefit from per-litre relief; variable welfare incidence	Datta (2010); Gupta & Tiwary (2026)
Note. Interpretive synthesis, not primary survey output or measured primary data on actual 2026 income-group exposure and coping.			

Table 2 shows that the oil-price shock affects income groups through different exposure channels. The lowest-income, PMUY-dependent households are most exposed to LPG refill affordability and may respond through fuel-stacking or delayed refills (Boardman, 1991; Asharaf & Tol, 2024; Angoori & Kumar, 2025). Lower-middle-income transport workers face higher petrol and diesel costs that may reduce other consumption or work activity (Ramanathan, 1999; Ghosh, 2010; Zhang et al., 2026). Middle-income households experience mixed petrol, diesel and LPG exposure, encouraging partial demand adjustment and reduced discretionary spending (Anand, 2016; Mani et al., 2021). Higher-income households may obtain larger absolute savings from uniform per-litre fuel relief because of greater fuel consumption, although this does not by itself establish regressive welfare incidence (Datta, 2010; Gupta & Tiwary, 2026). The key distributional issue is whether fuel-price support reaches households most vulnerable to the specific shock, consistent with the energy-justice criteria of Sovacool and Dworkin (2015).

Structural Policy Response and the Feedback Loop

There are three major structural responses involved in India's effort to deal with the vulnerability created by the crisis as analyzed critically in this essay and not descriptively as would be required by Adger (2006) who maintains that vulnerability studies must examine the governance mechanisms mediating exposure and adaptive capacity, not merely catalogue their existence. First, the diversification of the source of supply to Russian crude and longer-distance sources in the United States and West Africa provides for greater network redundancy but not for the total exclusion of geopolitical risks. Carnegie India notes the trade-offs in supplier diversification, refinery compatibility, sanctions exposure, and longer-distance transportation (Sahai, 2026). The appropriate analytical distinction is therefore between

risk substitution and risk elimination. Consequently, the governance recommendation is qualified in that the agreements on commercialization should include provisions for immediate government access, recall, ownership, and release during the declared emergency. Thirdly, the emergency response plan by the IEA in 2026 serves as a benchmark in coordinating an emergency response; this response involved the largest ever emergency oil stock release with simultaneous demand side actions and protection of consumers (IEA, 2026). The paper does not infer a normative judgment about India's reserve policy from this comparison. It identifies the institutional trade-off between preserving national stocks and participating in coordinated stabilization as an issue for future research. Finally, demand-side substitution can become a longer-run hedge. The 2026 mobility study shows that oil-price shocks can induce heterogeneous changes in travel behavior and adaptive capacity (Zhang et al., 2026). This supports the feedback-loop argument, but the paper does not attribute a specific national EV-registration increase to the crisis because that claim rests on an analyst estimate rather than an official causal series. Electrification is therefore treated as a structural, multi-year response rather than a measured short-run buffer.

Limitations

Three limitations should be considered. First, the qualitative document-based method does not allow causal quantification of household welfare losses; the illustrative quintile mapping and incidence identity are analytical devices rather than measured FY2026 welfare estimates. Second, some quantitative estimates, especially Hormuz-route import shares, depend on analyst or model-based sources, although official PPAC, parliamentary, MoPNG, and IEA sources anchor the price and policy chronology. The ICRIER fiscal figure is an annualized model estimate based on stated assumptions rather than an ex post budget outturn. Third, national-level analysis cannot capture state- and household-level differences in income, fuel dependence, LPG access, consumption patterns, and exposure to price changes. Future research should combine PPAC daily prices, OMC refill bookings and cancellations, delivery lags, state stock-out indicators, and household expenditure microdata to estimate event-study effects and fuller incidence decomposition. Accordingly, the study does not claim to establish the causal size of household welfare losses, the volume of LPG diverted into informal markets, or the share of households reverting to biomass during the crisis; these remain mechanisms and hypotheses for future testing.

Policy Implications and Recommendations

The temporary relief policy for LPG, through the current PMUY subsidy architecture, is an illustrative policy option because of the price increase of LPG, the presence of the PMUY subsidy architecture and the potential vulnerability to affordability for energy vulnerable households. A potential approach is to implement a DBT top-up that corresponds to a real refill in a recognized supply shock. About 10.33 crore PMUY connections, a ₹ 60 top-up would require approximately ₹ 620 crore for one national refill round a year (Lok Sabha Secretariat, 2025; PPAC, 2026). This top-up of ₹60 and the subsequent calculations of ₹620 crore are not estimate of the optimal policy or the required policy or an empirically determined policy requirement. Further household-level and fiscal analysis would be needed to determine the level, timing and targeting requirements, as well as fiscal costs of any such intervention.

Second, strategic petroleum reserves and their susceptibility to extended external supply disruption form a rationale for considering provisions for emergency access in Phase II commercialization agreements for SPR. Explicit clauses of emergency recall and of access to the government may thus be kept or discussed in commercialization agreements. This is not to mean that it is a definitive contract design that is superior, but merely a risk-management option identified from the vulnerability in the supply chain.

Thirdly, the different exposure of crude and LPG to geopolitical and maritime-route disruption also allows for assessing the potential for increased diversification in the fuel supply chains. Any diversification could be measured based on correlated geopolitical risk, source diversification, and refinery capability, and may be accomplished through network-based techniques like Sharma and Lau (2026) proposed. The recommendation thus only recognizes diversification as an analytical and policy option that has been observed due to the differences in supply-chain exposure, but does not require a particular diversification configuration.

Fourth, the potential for sub-national LPG availability and household-level exposure offers a justification for enhancing real-time monitoring of LPG refill rates, booking delays, cancellations and availability at the retail level. This monitoring can be based on the ACCESS and IRES approaches developed by CEEW (Council on Energy, Environment and Water, 2015 and Mani et al., 2021) respectively. The recommendation is designed to enhance the information available to support the identification of emerging distributional pressures but does not assume that PPAC (2026), Lok Sabha Secretariat (2026) or the Ministry of Petroleum and Natural Gas (2026a, 2026c) are sources of information on the magnitude of sub-national shortages or household disruptions.

Fifth, the importance of external supply resilience identified gives a foundation to assess participation in international emergency-response mechanisms based on clear criteria. The criteria may include stock sufficiency, reciprocal access and possible market-stabilizing effects. This participation must therefore be evaluated based on the established institutional and market criteria as a policy choice, not as an automatic choice in response to the 2026 disruption. These recommendations are not empirical prescriptions, but are source-grounded policy options. All are associated with vulnerability identified by Wright Research (2026), PPAC (2026), MoPNG (2026), Argus Media (2026), and Sharma and Lau (2026), and for the proposed interventions, effectiveness, optimal design, fiscal cost and distributional consequences have yet to be considered empirically.

Conclusion

This study set out to trace how the Israel–Iran war and the 2026 Strait of Hormuz disruption transmitted into India's fuel supply chains, domestic price structure, and the potential welfare implications for energy-vulnerable populations. The combined findings reported by the IEA (2026a, 2026b), PPAC (2026), Gupta and Tiwary (2026), and Lok Sabha Secretariat (2026) support a more precise conclusion than a single headline retail-price statistic: the shock was distributed differently across crude, LPG, fiscal policy, inventories, and household exposure. Petrol and diesel prices were broadly shielded in the early crisis

period, while the Lok Sabha Secretariat (2026) records a ₹60 domestic LPG price increase alongside continued targeted PMUY support. ICRIER's 0.58 per cent of GDP annualized estimate indicates the potential scale of fiscal absorption under stated assumptions, but it is not a measured total incidence of the crisis. The household burden remains a hypothesis to be tested with refill and expenditure microdata. Ministry of Petroleum and Natural Gas (2024), Wright Research (2026), and Sharma and Lau (2026) reveal an import-dependent network in which crude, LNG, and especially LPG has different exposure and substitution possibilities. Theoretical integration of supply-chain resilience, oil-price shock, fuel/energy poverty, and energy-security scholarship provides a framework for tracing those differences into distributional questions. The paper's principal empirical contribution is not a new causal estimate, but a transparent structure for combining observed prices, modeled fiscal costs, route exposure, and household vulnerability without conflating them. The framework can be tested as PPAC, OMC, and household microdata become available. By integrating these literatures into a connected analytical transmission framework, the study advances a distributionally conscious account of energy insecurity in which the relevant question is not only whether energy remains available, but how the costs of maintaining availability and affordability are allocated. The 2026 episode demonstrates why future resilience assessments should report both national supply indicators and distributional indicators such as retail pass-through, fiscal shielding, refill-delay rates, and targeted-relief adequacy. In this paper, this connected framework is designated the Integrated Distributionally Conscious Energy Security Framework (IDCESF).

Declarations

Author Contributions

Dr. Showkat Ahmad Dar conceptualized the study, curated the literature and documentary sources, conducted the formal theoretical analysis, and prepared the original manuscript. Dr. Arvind Shanker Shukla contributed to the methodology, selection and application of the theoretical perspectives, and critically reviewed and edited the manuscript. Dr. Rukmani Joshi contributed to literature and data curation, investigation, methodological development, and visualization. Dr. Anviti Gupta and Anushika Tyagi contributed to project administration, resource management, supervision, and critical review and editing of the manuscript. All authors reviewed and approved the final version of the manuscript.

Ethics Approval

This is a theory-based study drawing exclusively on publicly available scholarly literature, institutional publications, policy documents, and other secondary sources. The study did not involve primary data collection, human participants, interviews, surveys, experiments, or access to identifiable personal information; ethics approval was therefore not required. The theoretical interpretations, analytical framework, and arguments presented in the manuscript were developed by the authors. ChatGPT was used only for language refinement, grammar correction, and assistance with the preparation of tables

and figures. All AI-assisted output was critically reviewed, verified, revised, and approved by the authors, who retain full responsibility for the content and conclusions of the manuscript.

Funding

Sharda University, Greater Noida India.

Conflict of Interest

The authors declare no competing interests.

Data Availability

This is a qualitative document-analysis study. All primary and secondary documents analysed are cited in the reference list and summarized, with source and access details, in the Appendix. No new primary dataset was generated.

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Figures

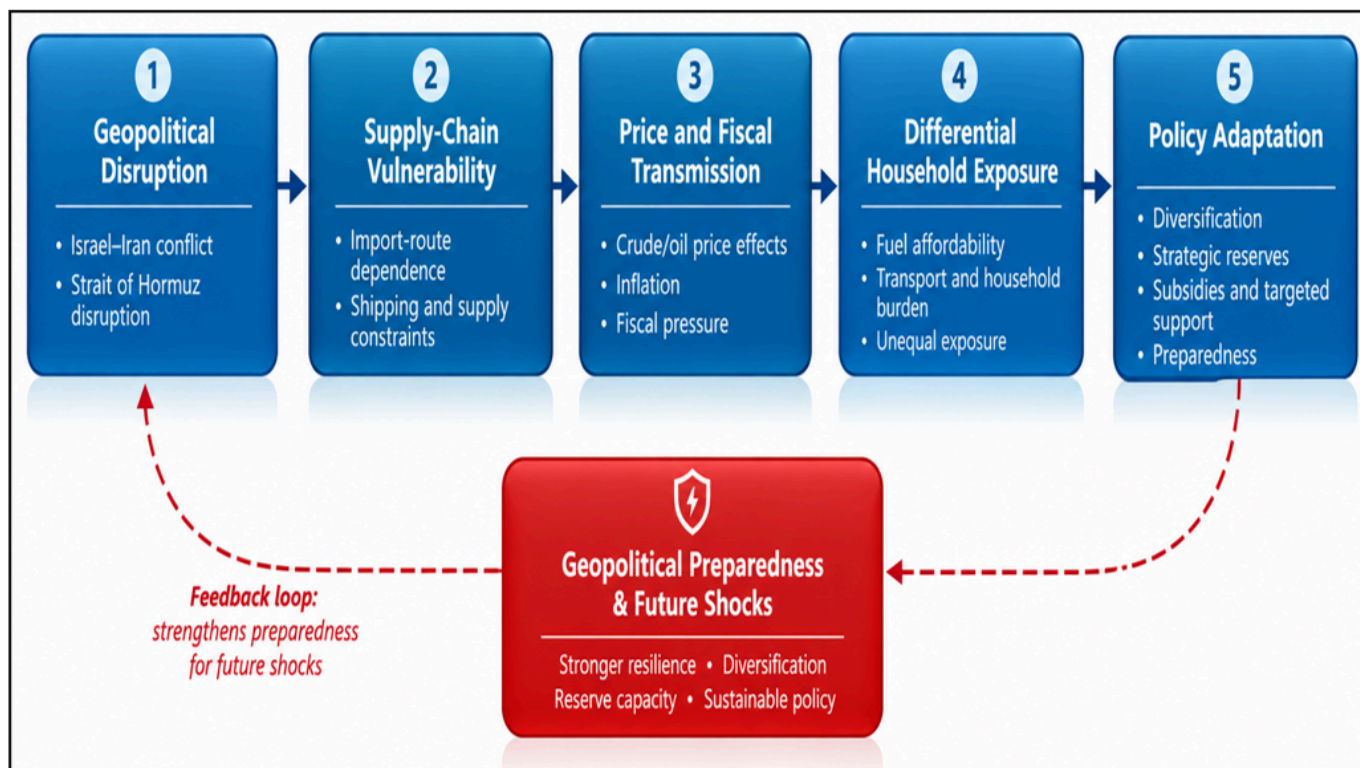


Figure 1

Integrated Distributionally Conscious Energy Security Framework (IDCESF): From Geopolitical Shock to Distributionally Conscious Energy Security Policy

Source: Authors' conceptualization.

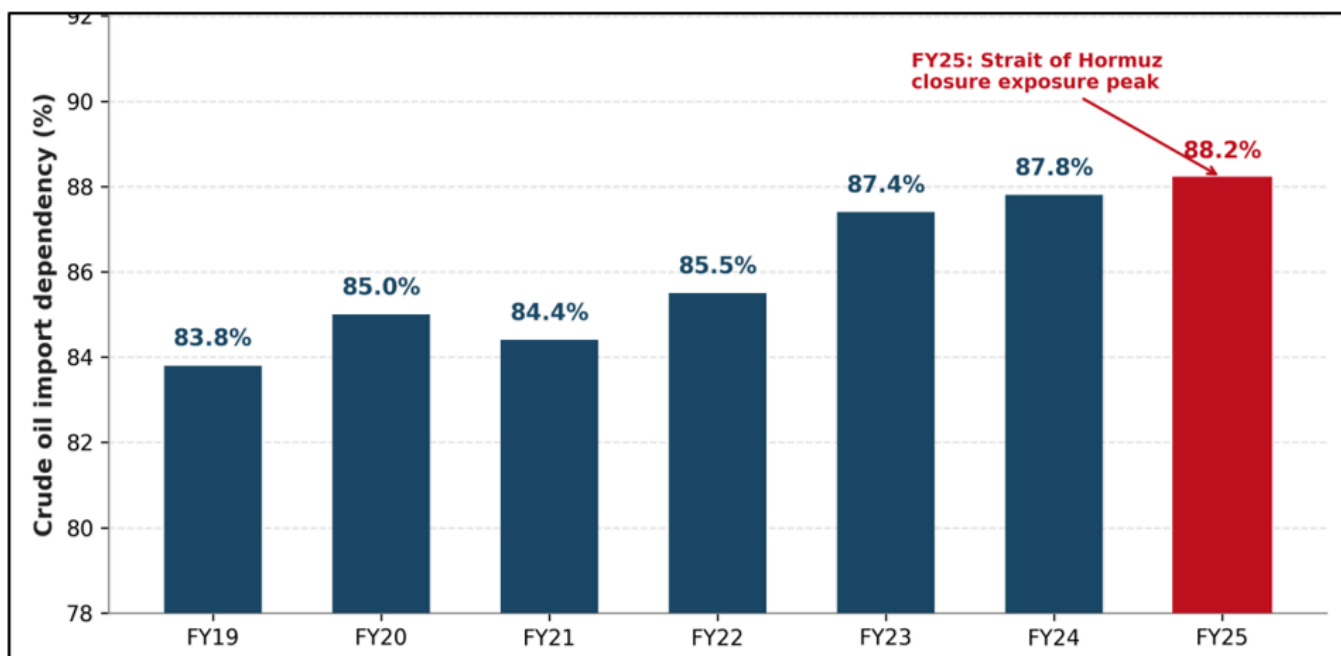


Figure 2

India's Crude Oil Import Dependency, FY2019–FY2025

Source: Compiled from the Ministry of Petroleum and Natural Gas, Rajya Sabha Unstarred Question No. 783 (2024), and PPAC provisional data.

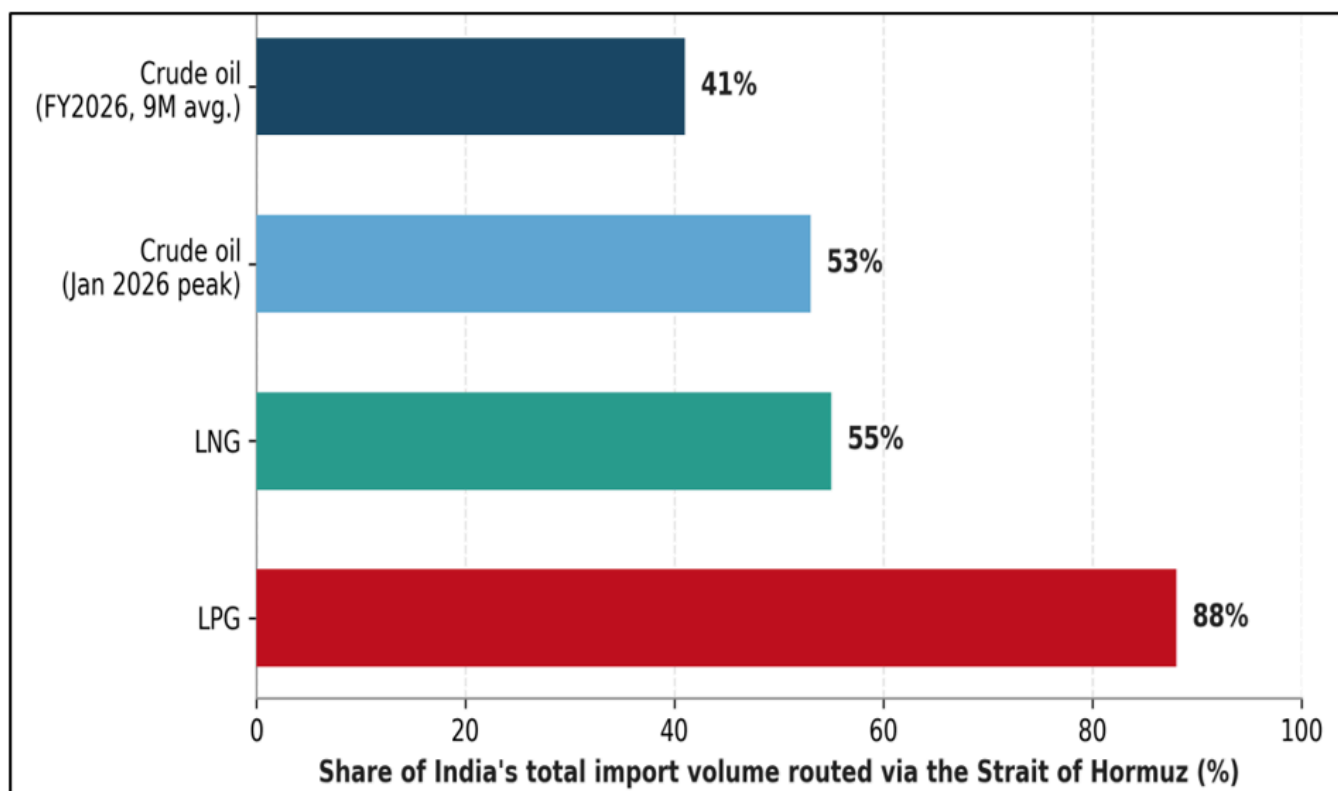


Figure 3

India's Energy Import Exposure to the Strait of Hormuz Chokepoint

Source: Compiled from Wright Research (2026), reporting Kotak Institutional Equities and Nomura estimates, and cross-checked conceptually against IEA (2026a, 2026b) and Sharma and Lau (2026).

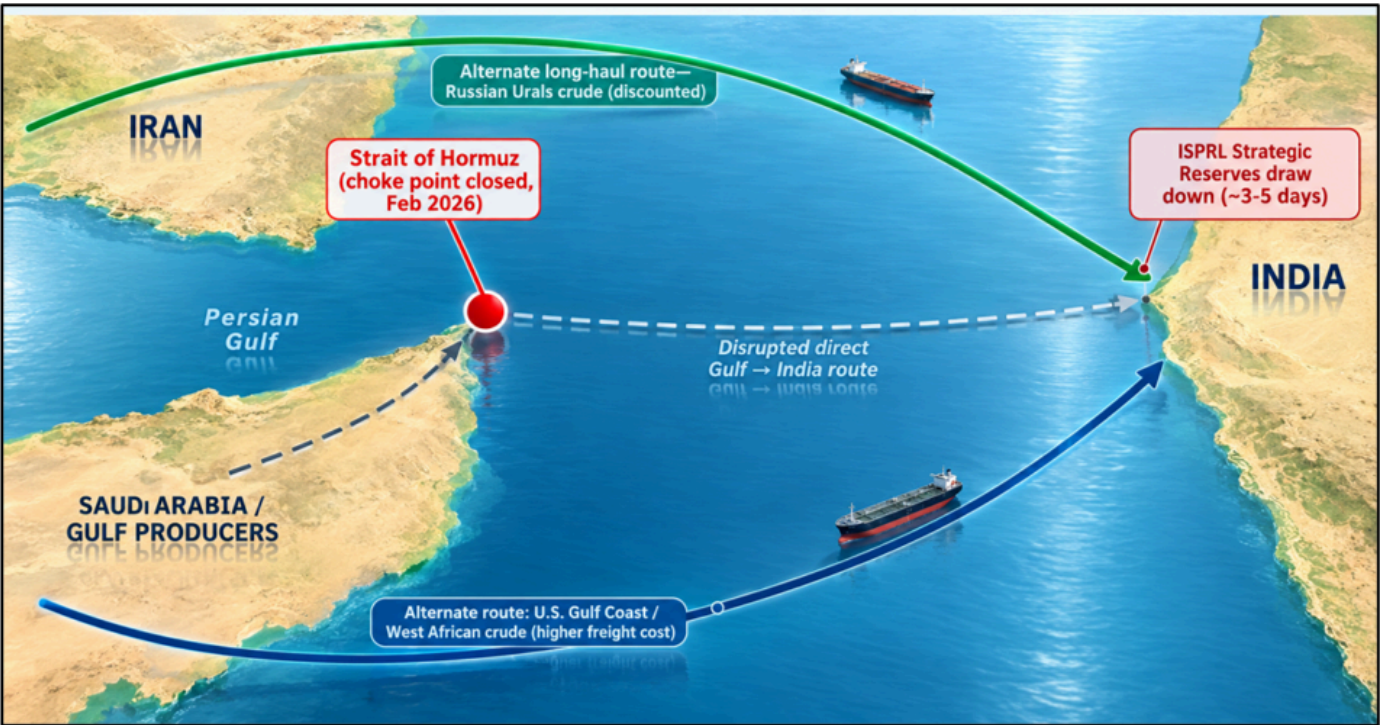


Figure 4

Schematic Disruption of India's Crude Oil and LPG Shipping Routes through the Strait of Hormuz

Source: Authors' construction based on Congressional Research Service, CRS Report R45281 (2026); Wright Research (2026); Business Standard (2025).

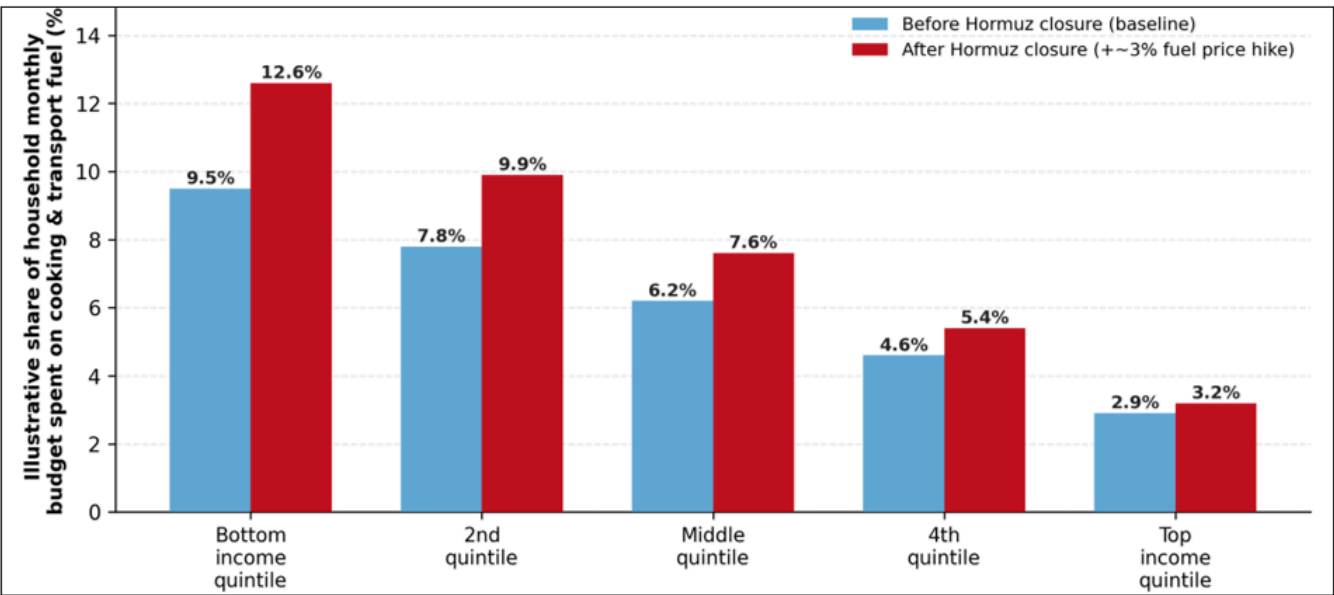


Figure 5

Illustrative Distributional Burden of the Fuel Price Shock across Household Income Quintiles

Source: Authors' construction, consistent with the income-based energy-expenditure disparities reported by Boardman (1991) and the CEEW ACCESS survey (2015).

Supplementary Files

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- [SupplementaryAppendixAFUEL.docx](#)